Exhibit 12 Part 5

Part 1 of Attachment J to the Allocation Recommendation Report (ARR0362-ARR0771)

United States' Motion to Enter Consent Decree,
United States v. Alden Leeds, Inc. et al., Civil Action No. 22-7326 (D.N.J.)

ATTACHMENT J

ALLOCATION PARTY FACILITY DATA REPORTS

TFCF AMERICA, INC.

Facility Name, Address and Size: TFCF America, Inc. (TFCFA) formerly known as 21st Century Fox America, Inc. (21CFA), Former Montrose Chemical Company; 100 Lister Avenue, Newark, New Jersey (in some instances listed as 120 Lister Avenue, but always a physically separate property from the Diamond Alkali facility [which was adjacent to the Passaic River but not adjacent to Lister Avenue] referred to as 80-120 Lister Avenue) (PAS-00075329). The facility consisted of 2.8 acres of land comprising Lot 19 and Lot 31 (PAS-00107021; PAS-00107037). The company employed 50 employees covering three shifts (PAP-00027746).

1. **Business Type:** Initially oil refining, organic chemical production (PAS-00107038); and during certain years in the 1940s – 50s the manufacture of agricultural and chemical products such as DDT, lindane, benzene hexachloride, benzene and chloral (PAS-00057943).

2. **Time Period of Ownership/Operations**

   Operator: Lot 31, between 1939 – 1972;
   Lot 19, between 1952 – 1972
   (PAS-00107037-38; PAP-00026385)

   Owner: 1939 – 1974 (PAP-00026385)

   1900s: Lister Agricultural Chemical Works developed the land between Lister Avenue and the Passaic River that included the 100 Lister Avenue site (PAP-00026384).

   1930: On March 26, 1930, American Agricultural Chemical Company deeded a portion of the property (Lot 19) to Peerless Oil Company of Delaware (PAS-00123322; PAS-00123316). According to a deed from 1952, Peerless Oil Company changed their name to Richfield Oil Corporation of New Jersey (PAS-00123322).

   1939: Montrose Refining Company (a predecessor of Montrose Chemical Company) acquired Lot 31 in August 1939 and began producing organic chemicals on that portion of the property (PAP-00026358-59; PAP-00026384-88).

   1943: On September 30, 1943, Montrose Chemical Company of New Jersey transferred a portion of the property (Lot 31) to Montrose Chemical Company, a limited Partnership (PAP-00026357-59).

   1952: Celia Bersohn deeded Lot 19 that she purchased from Richfield Oil a month earlier to Montrose Chemical Company, Inc. (PAP-00027697-98). Montrose Chemical Company, Inc. subsequently occupied both parcels.

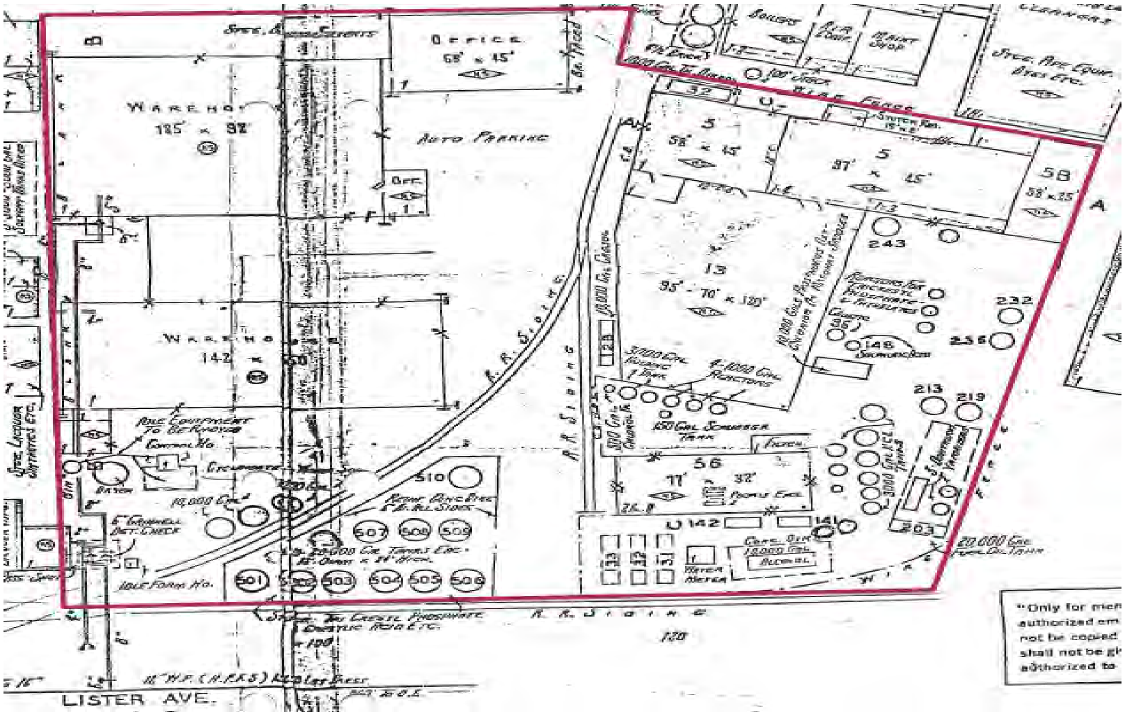
   1961: Montrose Chemical Company, Inc. merged with Baldwin Rubber Company into Baldwin-Montrose Chemical Company, Inc. (PAS-00075329). Baldwin-Montrose Chemical Co. became the corporate successor of Montrose Chemical Company in 1961 (PAP-00027588). Operations proceeded over the next seven years (PAP-00026384-88).

TFCFA America, Inc.

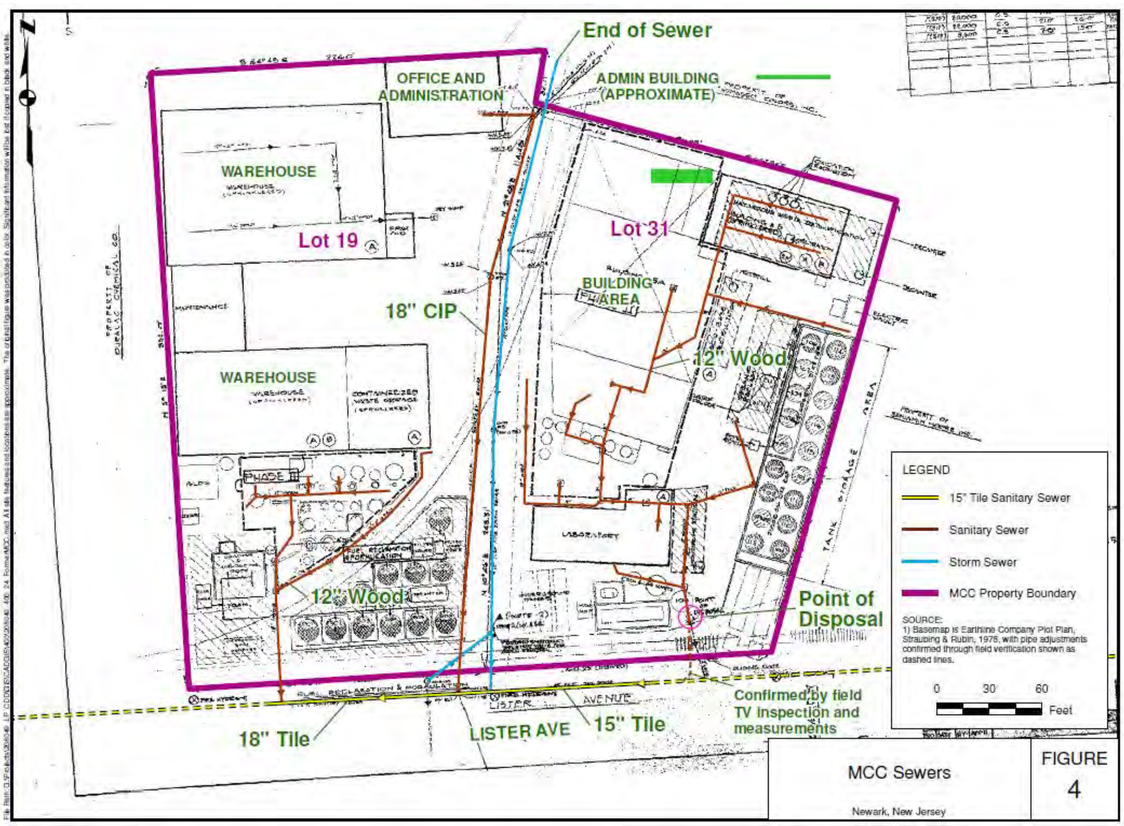
Diamond Alkali OU2 Allocation

ADR Confidential

Facility Data Report



(PAP-00027686)



(PAP-00027688)

1968: Baldwin-Montrose Chemical Company merged with Chris-Craft (PAS-00057950; PAP-00026385).

1972: Chris-Craft leased the property in 1972 to Sobin Chemicals, Inc. (PAP-00027701) and sold the property to them in 1974 (PAP-00027706). Chris-Craft ceased operations at the property in 1972 and Sobin Chemicals, Inc. operated the facility through early 1977. Between 1974 and 1977, IMC Chemical Group, Inc. became the corporate successor to Sobin, and the Newark facility operated as its Organic Chemicals Division. Operations did not significantly change, as reported by former employees (PAS-00075329).

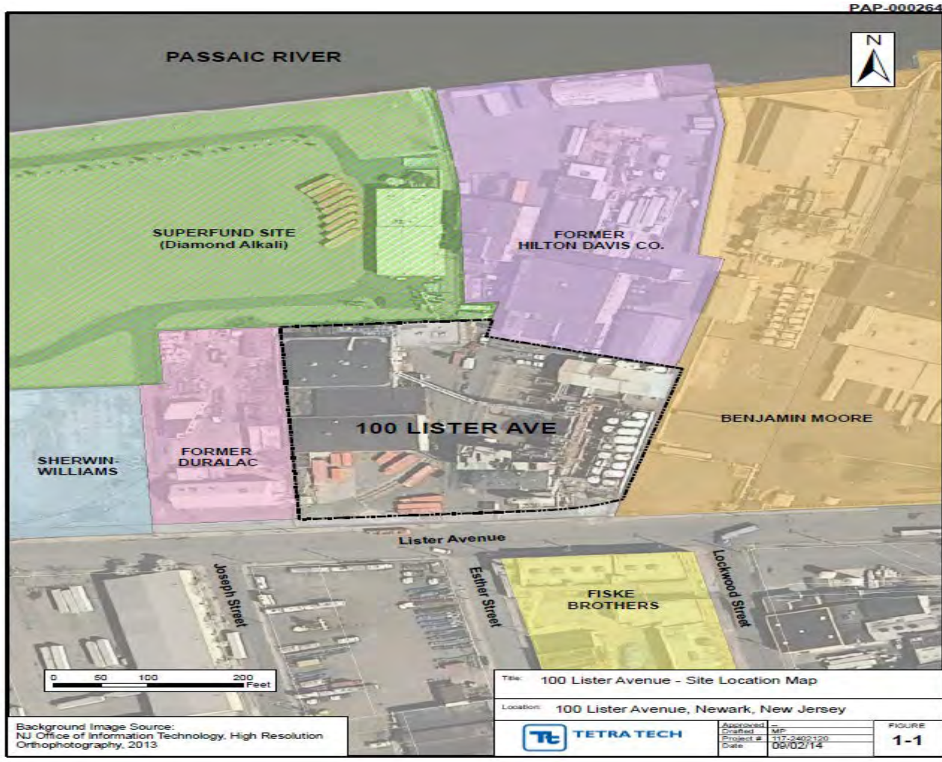
1977: In December 1977, SCA Services of Passaic Inc. (SCA) received an interim permit from the NJDEP to construct and operate a RCRA hazardous waste facility (PAP-00026385).

1978: SCA occupied the Site in April 1978 under a lease agreement (PAP-00026385).

1984: In September 1984, SCA Services, Inc., parent company to SCA, was acquired by Chemical Waste Management (CWM) until approximately 1995 when active waste operations ended (PAP-00026385). During these years, the property housed a drum storage and decant building, liquid waste tank farms and a chemical treatment unit (PAP-0026388).

1992: Since 1992, CWM has been conducting remedial investigation and response actions under the supervision of NJDEP (PAS-00012947, 51).

PAP-00026488



3. Operational History/COC Use and Presence at the Facility

According to a June 1995 *Draft Supplemental Remedial Investigation Report*, prepared for successor site owner Chemical Waste Management of New Jersey, Inc. (CWM NJ), dated June 1995, Montrose Chemical Company's finished products consisted of pesticides, solid rocket fuel, salisaldehydes, tear gas, suntan lotion, dimethyl isophthalates, and other products (PAS-00107041). According to former Montrose Chemical Company employee Kelsey Brown, the facility produced benzene hexachloride, chloral hydrate, DDVP (Vapon, an insecticide), dimethyl-isophthalate, dioctyl-phthalate, hexachlorobenzene, tricresyl phosphate, and triphenyl phosphate. He reported Montrose began to produce malonitriles after he left in 1963 (PAS-00075288-90).

According to the June 1995 *Draft Supplemental Remedial Investigation Report*, the total plant capacity was 400,000 gallons (PAS-00107043). The majority of chemical manufacturing took place on the eastern portion of the site (Lot 31). Reaction tanks/vessels were present throughout the eastern parcel both indoors and outdoors. Warehouses and office space were located on Lot 19. A building doubling as office space and a laboratory was located in the southern portion of the eastern parcel (PAP-00026387).

DDT Production

According to the affidavit of Benjamin Rothberg, a former employee of Montrose Chemical, between 1945 and 1950 Montrose Chemical Company produced the insecticide DDT (PAP-00027863). According to an October 13, 1949 New Jersey Sales Agreement, for the period from November 1, 1949 to November 1, 1954, unless this period is extended or shortened, Montrose agrees to purchase from Montrose of California all of Montrose's requirements of technical dichlor diphenyl trichloroethane (DDT) not over 3,000,000 pounds in any twelve month period or more than 250,000 pounds of DDT in any calendar month (PAP-0035346).

According to the February 2, 1994 EPA interview of Mr. Kelsey Brown, DDT was not produced when he began working at Montrose in March 1951, although he was told by other employees that it had been made there in the 1940's. He was told that chlorination of phenols associated with DDT production caused explosions at the facility. Note: "production caused explosions at the facility" was corrected to were conducted (PAS-00075288).

According to the March 24, 1994, deposition of former employee Solomon H. Koved, who worked for Montrose Chemical Company between 1943 and 1971 (PAS-0003924), DDT production began by producing chloral from ethyl alcohol in lead and steel barrels (PAS-00004046-47; PAS-00004013-14). Chloral was used in both DDT production and 2,4 dichlorophenoxyacetic acid (2,4-D) production (PAS-00004046-49). Once produced, chloral required the removal of water and alcohol, so it had to be dried. To do so, it was placed in a 700-gallon still with a vapor line and agitated. A condenser received approximately 400-500 gallons of crude chloral that was moved to another still (PAS-00004047-48). Spent sulfuric acid was added to the still, and the mixture was agitated

and subjected to distillation temperatures estimated by Koved to be between 90 and 110 degrees centigrade. A receiver collected the relatively pure, solid chloral that was mixed with monochlorobenzene to turn it into a liquid. The mixture was sent to the back of the plant to make DDT in two or three reactors (PAS-00004048-49).

According to the March 24, 1994, deposition of former employee Solomon H. Koved, DDT is a result of a reaction between two monochlorinated benzene molecules. The purified chloral was placed into a 2,000-gallon reactor to which a “large quantity” of chlorobenzene was added (PAS-00004049). The mixture was cooled to between 5 and 15 degrees centigrade with a brine circulation jacket, 20% oleum (100% sulfuric acid and 12% SO3) was added (PAS-00004050-51). Oleum removed the water produced during the reaction. According to Koved, in an ideal situation, it would result in DDT and water, but byproducts included sulfonated benzenes (detergents) and excess spent acid that was reused (PAS-00004051-53). The spent acid was drawn off the bottom of the reactor leaving DDT in solution with monochlorobenzene. Monochlorobenzene was distilled off, and then as a solid ran into panels containing 2,000 pounds of DDT. The panels were approximately 6 feet by 10 feet, and the molten DDT cooled into a big block. DDT purity was between 95 and 98%, assessed by its melting point of 89 degrees centigrade (PAS-00004054-55). DDT was then chipped off and either sold as a powder, or it went to a tank and was turned into solution for further treatment for customers like the military (PAS-00004055-56).

According to the March 24, 1994, deposition of former employee Solomon H. Koved, grinding the DDT was very rudimentary and scattered powder. There were no containment efforts for grinding (PAS-00004069). The DDT adhered to the concrete floors, and it would be scraped off the floors and washed down into troughs (PAS-00004069). Chris-Craft believed production of DDT took place between 1945 and 1950, and at the end of the period production yielded approximately three million pounds per year (PAS-00106736-37).

Tricresyl Phosphate (TCP) Production

According to the 2017 Expert Report of Eric L. Butler, Ph.D., TCP and TPP are high-volume chemicals widely used as a plasticizer in polyvinyl chloride; as a solvent and thinner in lacquers and varnishes; as a flame retardant additive in plastics, rubbers, and hydraulic fuels; as an additive in heat exchange media; and as a lead scavenger in gasoline (PAP-00027614). According to the March 24, 1994, deposition of former employee Solomon H. Koved, TCP is made from phosphorus oxychloride and cresol that were mixed in a reactor with a catalyst (zinc chloride or aluminum chloride) and heated between 180 and 225 degrees centigrade to make a 500-gallon batch (PAS-00003959-60; PAS-00003972-73). Phosphorus oxychloride was a clear, colorless liquid that was stored in the yard on-site in sealed tanks. It was extremely corrosive and dangerous to handle (PAS-00003968-69).

According to Koved, cresol would frequently arrive in drums by tank cars or tank wagons. The drums were occasionally stored on-site for long periods of time. Intermittently the drums corroded to the point of leaking (PAS-00003967-68). Cresol was measured in a “charge tank” which was approximately 500 to 800 gallons with a line

on an observation glass for measurements. Phosphorus oxychloride was treated very cautiously due to its corrosiveness. The two storage tanks were connected to a blow case – a small underground steel vessel with a vent on the roof to release pressure (PAS-00003970). The 3-4-hour reaction produced hydrochloric acid gas in lead pipes that contained water to dilute the solution to an approximate concentration of 32% (PAS-00003974; PAS-00003959-60).

According to Koved, Montrose had a crew to replace the "chewed up" lead pipes caused by the hydrochloric acid. The solution contained traces of cresol and possibly traces of phosphorus oxychloride, as well as metals from the pipes. Approximately 1200 to 1500-gallons of spent hydrochloric acid solution was believed to be sold at a time to a trucker for further use, what did not sell and was excess byproduct production that reportedly went to the sewer (PAS-00003974-75; PAS-00003978-79).

Once the tricresyl phosphate crude was produced, it would fall to the bottom of the tank and be removed. It was then mixed with water and placed in 1,000 gallon open-topped wash tanks. There were four wash tanks made of mild steel. The operator would add equal amounts of water and wash the acid until it was neutral. Then the mixture was washed with two or three washes of alkali to remove unreacted cresol. The next step would be an oxidizing wash that used either sodium peroxide or potassium permanganate. The process took place in an aqueous medium to reduce the color that was initially lemon yellow. There were additional water washes and alkali washes in order to achieve the lightest color (PAS-00003960-61).

According to an interview summary, dated January 25, 1994, former Montrose Chemical employee Oscar Randall reported the floors were always sticky and spills occurred regularly. At times the floor was washed with caustic to remove the product (PAS-00003916). According to a RI interview summary, dated June 8, 1994, former Montrose Chemical employee Thelbert Cameron stated that "The floor of the facility was comparatively clean. There was some spillage from broken lines but we cleaned the floor at the end of each shift. The floor was pitched toward the floor drains. There were ditches in the floor that were concrete. The liquid that ran through the drains was grey, grey brown, dark grey or dark to light brown. The drains went to a holding tank at the front of the plant" (PAS-00075286). Benjamin Rothberg also stated that the floors at the facility were kept clean: "[i]n other words, any time there was any leakage, we would take care of it. And some of the leakage was not the kind of thing you could tolerate, for instance chlorine leakage is very unpleasant and so is hydrochloric acid leakage." He stated the floors were generally just cleaned with a broom (PAP-00027766-67).

According to Koved, approximately up to 5% excess of the cheapest raw material in the wash water being discharged into the sewer (PAS-00003976). The wash water would discharge to the sewer and converge on a sewer box, which was a four-foot diameter wooden containment sunk into the ground to receive sewage or process water. The sewer box was located approximately ten feet from the north margin of Lister Avenue, and it went in the direction of Lister Avenue. Storm water could also go into the open conduits used throughout the facility to manage process water (PAS-00003962-63).

Koved also stated that during his years of employment, Montrose produced tricresyl phosphate at the facility in a thousand-gallon copper reactor that was three to four feet in diameter and about eight feet long. The reaction would decompose the copper reactor until it would spring a leak and Montrose would either repair or purchase a new one (PAS-0003979). About one and a half batches were produced per 24 hours. A batch was composed of 500 gallons of product and 500 gallons of wastewater (PAS-00003986).

2,4 Dichlorophenoxyacetic acid (2,4-D) and 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T) Production

According to the affidavit of Benjamin Rothberg, for about two or three years in the late 1940s or early 1950s Montrose Chemical Company produced 2,4-D (PAP-00027863). According to the March 24, 1994, deposition of former employee Solomon H. Koved, production of 2,4-D required phenol, chlorine and chloroacetic acid (PAS-00003990). Approximately 500 gallons of phenol was put into a reactor and heated to an estimated temperature of 100 degrees centigrade and chlorine was introduced until 2,4-dichlorophenol was produced (PAS-00003991-92). Koved believed at this point that dichlorophenol was treated with sodium hydroxide to create a sodium salt in solution. Chloroacetic acid was dissolved in water and the two solutions were mixed and heated to less than 100 degrees centigrade. The chlorine of the chloroacetic acid would react with the sodium of 2,4-dichlorophenylate and form sodium chloride. Sodium chloride and 2,4-dichlorphenylate would then join to form 2,4-D (PAS0003995-96). Koved explained 2,4-D was insoluble in water and was filtered from the water phase. Following the filtration process, impurities were "discarded to the sewer" (PAS-00003996). The composition of the impurities was undefined (PAS-00003966).

Mr. Koved stated that 2,4,5-T was manufactured for six months or less in the early 1950s (PAP-00027757). According to the 2017 Expert Report of Eric L. Butler, Ph.D., " the production of 2,4,5-T has been strongly disputed by Montrose's former Production Manager and Technical Director, Benjamin Rothberg, who worked at Montrose from the late 1930s until approximately 1966. Mr. Rothberg, a chemist, was intimately familiar with all of Montrose's operations and production processes, and has stated that Montrose did not ever commercially produce 2,4,5-T (PAP-00027612).

According to the Expert Report, Rothberg stated:

> "I understand it has been claimed that MCC may briefly have manufactured the herbicide 2,4,5-T for a few months around 1950. I am confident, however, that we never produced 2,4,5-T. I have good recollection of the pesticides we produced, and 2,4,5-T was not among them. My recollection is corroborated by the reports prepared by the United States Tariff Commission for 1949-1951 documenting the products we have manufactured and sold. These reports were based on information Montrose provided to the Tariff Commission, and demonstrate that Montrose informed the Tariff Commission that it has produced a number of chemical products -- including TCP, DDT, 2,4-D and Lindane -- but made no mention of 2,4,5-T." (PAP-00027612).

The Expert Report continued, "As stated by Mr. Rothberg, contemporaneous US Government reports reflect that MCC [Montrose] never manufactured 2,4,5-T. Specifically, MCC and other chemical manufacturers reported to the US Tariff Commission the chemicals they produced, and the Commission prepared an annual Report on Synthetic Organic Chemicals compiling that information…. MCC reported that it had produced chemicals pointed to by Maxus as theoretically associated with dioxins. MCC never reported having produced 2,4,5-T, in any year. On the other hand, MCC did report having produced a number of chemical products --, including TCP, DDT, 2,4-D and lindane-- but made no mention of 2,4,5-T"(PAP-00027612).

However, according to the March 24, 1994, deposition of former employee Solomon H. Koved, 2,4,5-T was produced with sodium chloride and 2,4,5-trichlorphenoxyacetic acid. The reaction and filtration processes were identical with 2,4-D (PAS-00004035-37). According to Dr. Butler, even if Montrose did briefly produce 2,4,5-T, the pesticide manufacturing process as described by Koved would have not produced dioxins and Montrose could not have produced commercial quantities of 2,4,5-T by direct chlorination of phenol. This process produces 2,4,6-TCP and not 2,4,5-TCP. Furthermore, unlike 2,4,5-TCP, 2,4,6-TCP is not associated with the formation of 2,3,7,8-TCDD (PAP-00027612-13).

Benzene Hexachloride (BHC) Production

According to Benjamin Rothberg, Montrose Chemical Company produced benzene hexachloride (BHC) for approximately three years in the early 1950s. Some of the benzene hexachloride was sold as lindane, (an isomer of BHC), some was sold as is, and other isomers underwent additional processing (PAP-00027863). According to an interview with former Montrose Chemical Company employee and research chemist, George Radan, dated April 27, 1995, the facility produced benzene hexachloride and its gamma isomer for at least ten years (PAS-00075282).

According to former employee Kelsey Brown, during the production of benzene hexachloride, alpha isomers were separated from the compound as a waste solid and stored outdoors, uncovered, on a concrete pad for a year. They were later used in the development of trichlorobenzene. Benzene used in the wash process was distilled off and stored in barrels (PAS-00075289).

4. Identified COCs

- PCBs (detected)
- Dioxins (detected)
- PAHs (generated, detected)
- Dieldrin (detected)
- DDx (generated, detected)
- Copper (detected)
- Lead (used)
- Mercury (detected)

PCBs

According to the June 1995 *Draft Supplemental Remedial Investigation Report*, a soil sample collected in 1995 from the center of the facility found Aroclor 1248. In addition, the facility had several transformers (PAS-00107118).

According to the December 18, 2001 *Potential PCB Sources to Passaic River Study Area* prepared for Chemical Land Holdings, Inc., PCB concentrations at the facility were as follows (PAS-00124566).

PCBs Concentrations (ppm)	
PCB	**Concentration**
Aroclor 1248 (service road soil)	25
Aroclor 1260 (tank of site operator)	210
Aroclor 1260 (sump system)	50

According to the 2017 Expert Report, prepared by Eric L. Butler, the service road sample was collected on May 28, 1993 from 1-3 ft bgs (PAP-00027623). According to an April 6, 1983 from SCA Chemical Services Company to NJDEP, the Tank (704) and sump system samples were collected from a Aroclor 1260 spill in 1983 (PAP-00353131-32).

Benjamin Rothberg testified that Montrose did not use or discharge PCBs at the facility (PAP-00027759; PAP-00027863). According to the December 2015 *Remedial Investigation Report*, CMI owned and operated the property as a hazardous waste treatment, storage and transfer facility from 1978 to 1995 (PAP-00026384-85). The CMI facility was known to have handled PCB-containing liquids based on the 1983 spill (PAP-00353131-33); and handled waste oils (PAP-00353059; PAP-00353117).

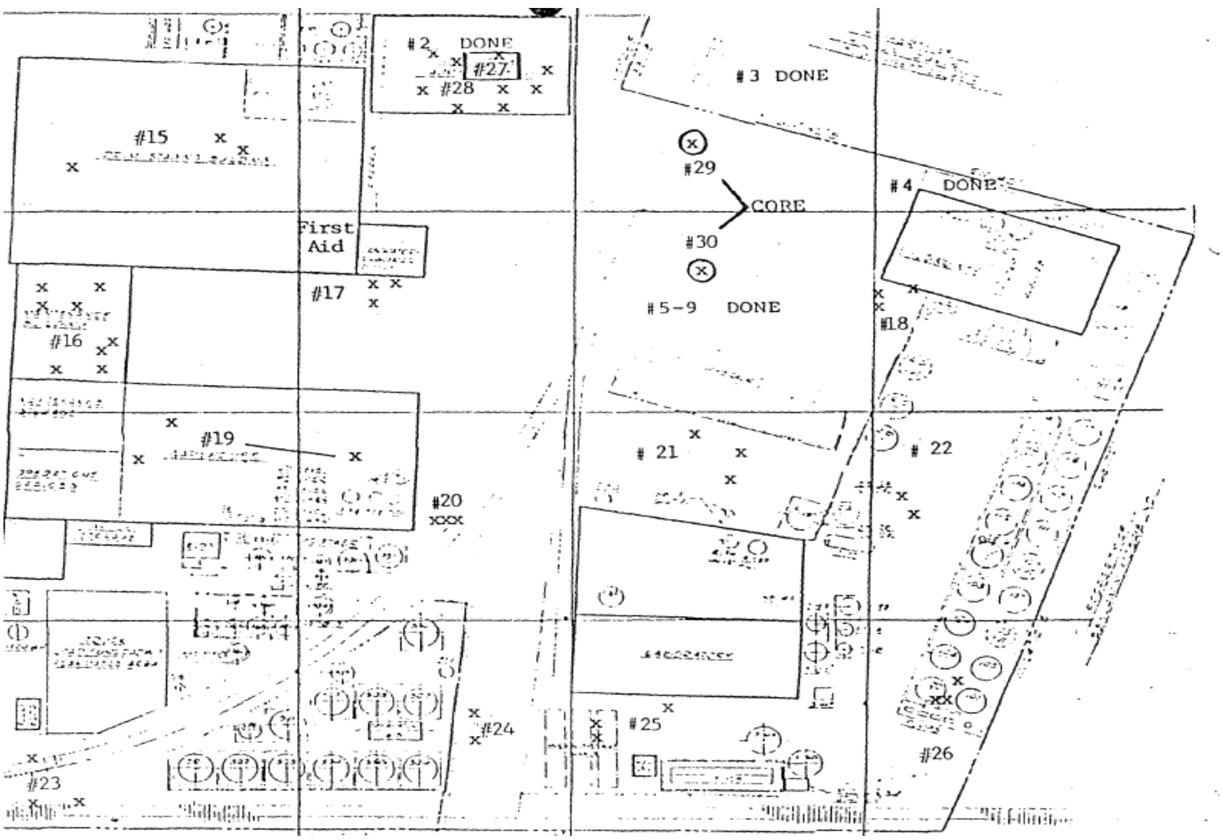
According to a document titled *The Former Montrose Chemical Company Property (100 Lister Ave.) Did Not Release or Discharge Dioxins, Furans, or PCBs to the Passaic River*, dated August 1, 2017, 50 soil and sediment samples from the property have been tested for PCBs, and only one, collected from a roadway area, tested positive. All of the sampling points closer to the Passaic River were non-detect, as were 10 sediment samples collected from on-site sumps, where run-off or waste material from operations would have concentrated (PAP-00027596). The December 2015 *Remedial Investigation Report* also reported no use of PCBs at the site and pursued no further sampling (PAP-00026459). On July 18, 2016 NJDEP reviewed and approved the *Remedial Investigation Report* (PAP-00027171; PAP-00027174) concluded that PCBs are not a site COC (PAP-00026459).

Dioxin

The December 2015 *Remedial Investigation Report* stated the herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) was manufactured onsite for a period of two years in the late 1940s to approximately 1950. The herbicide 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) may have been produced as a test product only in the late 1940s. These chemicals are relevant because production of 2,4,5-T under certain conditions has been linked to the formation of dioxins. . However, the report concluded that because Montrose did not use stills, utilized different reagents, and chemistries were conducted at lower temperatures, it was not expected dioxins would be formed (PAP-00026458).

According the 2017 Expert Report prepared by Eric L. Butler, Ph. D, current 2,4-D production methods are not associated with dioxin byproducts. In light of the similarity in today's manufacturing methods and those used by Montrose, Montrose's manufacture of 2,4-D would not have produced dioxin (PAP-00027613).

A November 7, 1983, Technical Report for SCA Chemical Services prepared by Environmental Testing identified a range of 0.23 micrograms per kilogram (µg/kg) - 1.6 (µg/kg) tetrachlorodibenzo-p-dioxin in samples collected from SCA 25 (front of Lab cracks and walkway 3 spots) and SCA 22 (crack in the cement in the east drive ramp from the new pad) (PAS-00107213-14). In addition, a range of 0.36 µg/kg - 4.2 µg/kg dioxin was detected in soils collected near the SCA Office building A/C compressor (PAS-00107212). A map of sampling activities is provided below.



(PAS-00107211)

According to the December 2015 *Remedial Investigation Report*, historical sampling stated that dioxin contamination was not present in soils at the site and that dioxins detected in historical dust and sweep samples were comparable in concentration and distribution to those detected throughout the area, resulting from dispersion related to the adjacent Diamond Alkali site. In addition, it was reported that historical manufacturing processes at 100 Lister Avenue would not be expected to have resulted in generation of dioxins. Therefore, dioxins and dioxin-like compounds were not considered site COCs (PAP-00026459). On July 18, 2016 NJDEP reviewed and approved the *Remedial Investigation Report* (PAP-00027171; PAP-00027174).

According to the report of Eric L. Butler, Ph.D. dated August 1, 2017, 41 samples were collected for dioxin between 1983 and 1993 (PAP-00027604). Concentrations of dioxins were not found in soil samples, but in dust samples and ranged from 0.23 µg/kg to 15 µg/kg in 14 of the samples. All others were non-detect (PAP-00027621-22). Samples where dioxins were detected were close to the Diamond Alkali Site (PAP-00027604).

PAHs

Sampling in May and July 2001 for the *Additional Remedial Investigation* identified soil sample GP12-S1 to contain the following PAHs (PAS-00106903).

PAHs Concentrations (mg/kg)	
PAH	**Concentration**
benzo(a)anthracene	6.2
benzo(a)pyrene	9.1
benzo(b)fluoranthene	6.9
benzo(k)fluoranthene	5.8
Dibenzo(a,h)anthracene	2.7J
Indeno(1,2,3-cd)pyrene	5.9

According to the December 2015 *Remedial Investigation Report*, sample GP12 is located in the center of the facility, and the sample appears to have been collected from between 5.5-6 feet bgs (PAP-00026497).

According to the December 2015 *Remedial Investigation Report*, soil sample DUP-CWM-1-2 collected between 4.5-5 feet bgs on July 12, 2013 contained the following (PAP-00026528).

PAHs Concentrations (mg/kg)	
PAH	**Concentration**
benzo(a)anthracene	25
benzo(a)pyrene	23
benzo(b)fluoranthene	31
benzo(k)fluoranthene	13
Dibenzo(a,h)anthracene	2.2
Indeno(1,2,3-cd)pyrene	6.7

According to the June 1995 *Draft Supplemental Remedial Investigation Report*, PAHs in Historic Fill resulted from commercial production from coal tar in the 1800s at coal gasification plants active at the time. The concentration of PAHs in surficial fill material was found at concentrations “mostly below standards,” but their collective existence reportedly proved that coal-related materials used as fill are a common source of PAH contamination (PAS-00107110-11).

The December 2015 *Remedial Investigation Report* confirmed benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and other PAHs were considered to be due to Historic Fill at the site. These PAHs were to be addressed in a Deed Notice for soils (PAP-00026451).

The site lies atop Lister's Agricultural Chemical Works, which occupied all the land between Lister Avenue and the Passaic River prior to 1900. It is reported that a site plan map of the company shows an asphaltum plant active in 1914. Asphaltic compounds may be responsible for PAHs at the facility (PAS-00107111).

Dieldrin

Soil samples collected in 1995 for the June 1995 *Draft Supplemental Remedial Investigation Report* showed an estimated concentration of 0.23 mg/kg dieldrin was found in soil sample 100S83RE (PAS-00107171). This sample was collected between 8 and 10 feet below ground surface (bgs) from Area of Concern C (PAS-00107144). Area of Concern C was the truck loading/unloading area on the eastern side of the facility (PAS-00107058).

Soil sampling conducted in 1993, prior to the 2015 *Remedial Investigation Report* found 40 mg/kg dieldrin in sample ABUST S1 collected between 0.5-2.5 feet bgs in the southeastern corner of the site (PAP-00026610, 6495).

According to the June 2017 *Remedial Action Selection Report/Remedial Action Work Plan*, dieldrin was not detected in any monitoring well in 2016; therefore, its extent was delineated (PAP-00027223).

DDx

According to the affidavit of Benjamin Rothberg, a former employee of Montrose Chemical, between 1945 and 1950 Montrose Chemical Company produced the insecticide DDT (PAP-00027863).

Soil samples collected in January and February 1995 for the June 1995 *Draft Supplemental Remedial Investigation Report* showed the following DDx concentrations (PAS-00107170).

DDx Concentrations (mg/kg)								
COC	**S8-1**	**S8-1 DL**	**S8-1 RE**	**S8-1 RE DL**	**S8-2**	**S8-2 DL**	**S8-2 RE**	**S8-2 RE DL**
4,4'- DDD	250	280	510	700	0.043		0.57	0.76
4,4'- DDE	130	130	220	260	0.019		0.32	0.31
4,4'- DDT	9,100	9,200	11,000	15,000	0.95	0.84	19	24

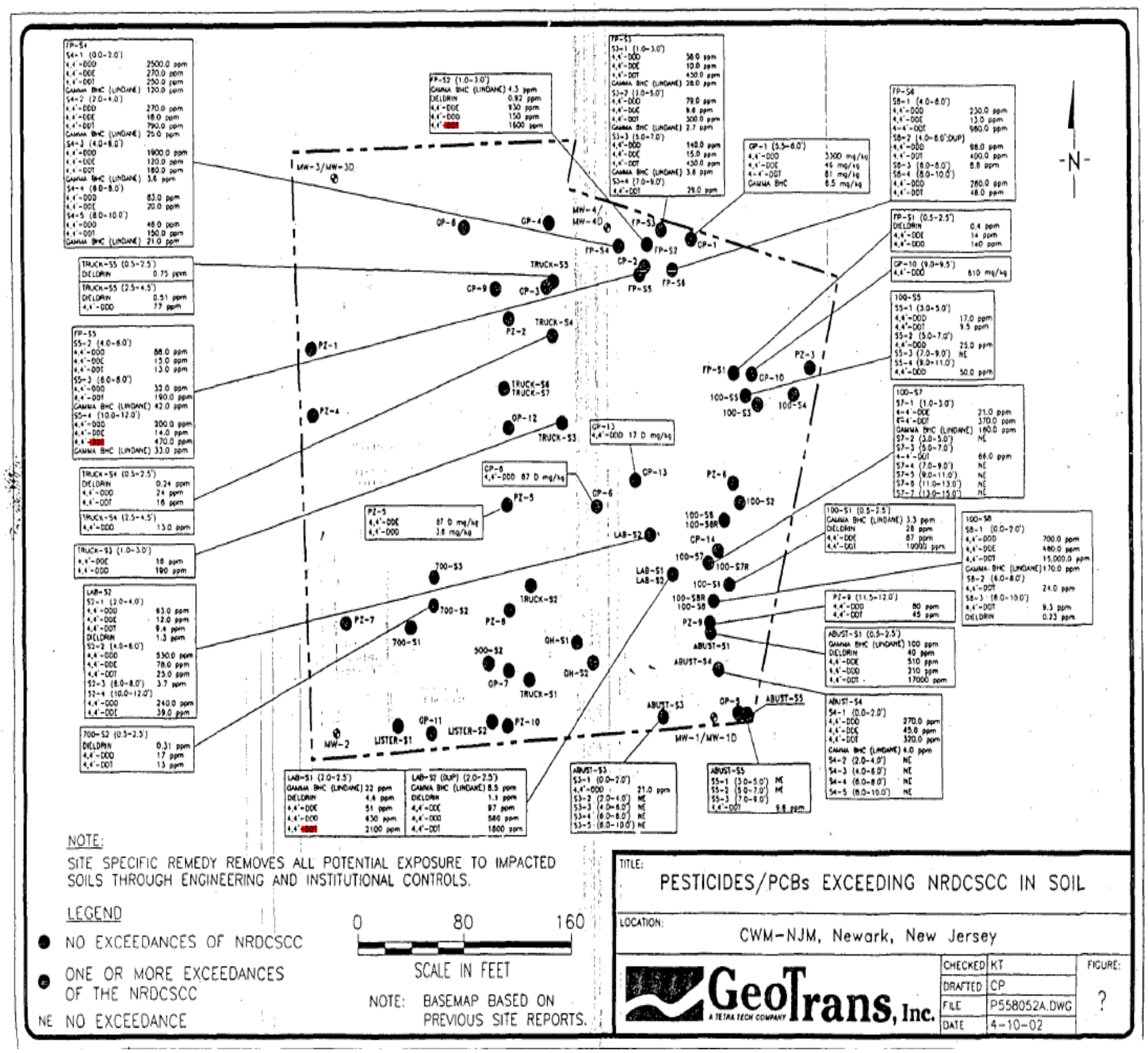
The samples came from Area of Concern A (east-southeast portion of the site) comprised of the Laboratory, Aboveground Storage Tank, and the 100 Series Tank Farm. Surficial fill material was collected in sample 100-S8-1 at an interval of 10 feet bgs and sample 100-S8-R was collected at 8 feet bgs (PAS-00107084, 148).

Soil samples collected for the *Additional Remedial Investigation and Remedial Action Selection Report* revealed the following DDx concentrations (PAS-00106906-09).

DDx Concentrations (mg/kg)						
COC	**PZ-05**	**PZ-05 DL**	**PZ-09**	**PZ-09 DL**	**GP1-S1**	**GP1-S1 DL**
4,4'- DDD	35E	67D	80	66J	360E	330D
4,4'- DDE	3.6	3.4 DJ	5.7J	5.9J	46	37J
4,4'- DDT	0.23J	ND	45	47J	61	47J

J: Indicates and Estimated Value for TICS
E: Estimated Value- Analyte concentration exceeds the calibration range

Soil sample locations are provided below (PAS-00106954).



Soil samples collected for the December 2015 *Remedial Investigation Report* detected the following max pesticide soil concentrations (PAP-00026613):

DDx Concentrations (mg/kg)				
COC	**Affected Media**	**Max Detection**	**Sample**	**Date**
4,4'- DDD	Soil/ GW	2,500	FP-S4 (0.5'-2')	Feb. 1995
4,4'- DDE	Soil/ GW	510	ABUST-S1 (0.5'-2.5')	May 1993
4,4'- DDT	Soil/ GW	17,000	ABUST-S1 (0.5'-2.5')	May 1993

According to the maps at the end of this section sample FP-S4 was collected in the northeastern part of the facility and ABUST-S1 was collected from the southeastern corner (PAS-00027128).

The 2015 *Remedial Investigation Report* states that impacts to soil above applicable standards are generally limited to the shallow (0-4 feet bgs) unsaturated zone and from there to just above the Meadow Mat or the upper portion of the Meadow Mat zone (PAP-00026462).

Metals – Copper Lead and Mercury

Lead piping was utilized in TCP production (PAS-00003974; PAS-00003959-60). According to the March 24, 1994, deposition of former employee Solomon H. Koved, Montrose had a crew to replace the "chewed up" lead pipes caused by the hydrochloric acid. The solution contained traces of cresol and possibly traces of phosphorus oxychloride, as well as metals from the pipes (PAS-00003974-75; PAS-00003978-79).

According to the June 1995 *Draft Supplemental Remedial Investigation Report,* copper was detected in the Rail Containment Excavation (Area 1 & 2) in 1990 (48 mg/kg), in the Trench Excavation Project 6A/6B (east-southeast portion of the site) (281 mg/kg) and in the center storm drain composite sample (136 mg/kg) (PAS-00107134).

The maximum mercury concentration in surficial fill shown in the June 1995 *Draft Supplemental Remedial Investigation Report* was 3.6 mg/kg in sample S-1 collected from the Trench Excavation Project 6A/6B (PAS-00107134).

According to the June 1995 *Draft Supplemental Remedial Investigation Report,* lead was detected in the Rail Containment Excavation (Area 1 & 2) in 1990 (671 mg/kg), in the Trench Excavation Project 6A/6B (east-southeast portion of the site) (378 mg/kg) and in the center storm drain composite sample (102 mg/kg) (PAS-00107134).

The 2015 *Remedial Investigation Report* cited an NJDEP letter, dated November 29, 1994 from the New Jersey Department of Environmental Protection (NJDEP) that confirmed metals contamination at the site is most likely due to fill material from local coal gasification plants that were placed in the original marshlands and was not a focus of subsequent RI activities (PAP-00026408). Sampling results generally showed the highest concentrations of contamination on the eastern half of the site (PAP-00026387).

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the Environmental Protection Agency (EPA) Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAS-00107134; PAP-00026528; PAS-00106903).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	671 mg/kg
Mercury	281 mg/kg
Benzo(a)anthracene	3.6 mg/kg
Benzo(a)pyrene	25 mg/kg
Benzo(b)fluoranthene	23 mg/kg
Benzo(k)fluoranthene	31 mg/kg
Dibenzo(a,h)anthracene	13 mg/kg
Indeno(1,2,3-cd)pyrene	2.2 mg/kg

According to the December 2015 *Remedial Investigation Report*, the surficial fill at the site consists of a mixture of coal ash, construction debris, and soil that was used to stabilize and raise the topographic grade of the marshlands along the Passaic River to allow for development in the late 1800s. It was reported that this regional imported Historic Fill material is the source of several site contaminants including certain PAHs and metals (PAP-00026450).

The fill is typically present from the surface (immediately beneath any impervious site cover) to a depth of seven to ten feet bgs, though fill has been observed as deep as 14.5 feet bgs. The fill is characterized as silt, sand, and gravel, dark brown to black in color, with concrete debris, red brick debris, wood chips/pieces, and slag variously present; olive green-stained gravel and concrete have also been identified in samples. Local groundwater is also impacted as a result of the presence of these Historic Fill contaminants (PAP-00026450).

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

5. COC Pathways

Combined Sanitary and Storm Sewer

According to the deposition of Benjamin Rothberg dated February 23, 2011, material remaining after the washing processes flowed into two tanks located between the office building (Building 56) and the railroad tracks. The tanks further separated material with an agitation/settling process before discharging it to the city sewer. He also stated that building floor troughs flowed into the two separators or trap tanks (PAP-00027761-62, 771, 778). Rothberg described floor washings that occurred once a week in some areas and possibly every four to five hours in other areas were flushed into acid-proof brick or ceramic tile lined trap tanks (PAP-00027771, 802). Although most of the troughs were located inside production buildings in the tricresyl area, there was an outdoor trench (PAP-00027828-29).

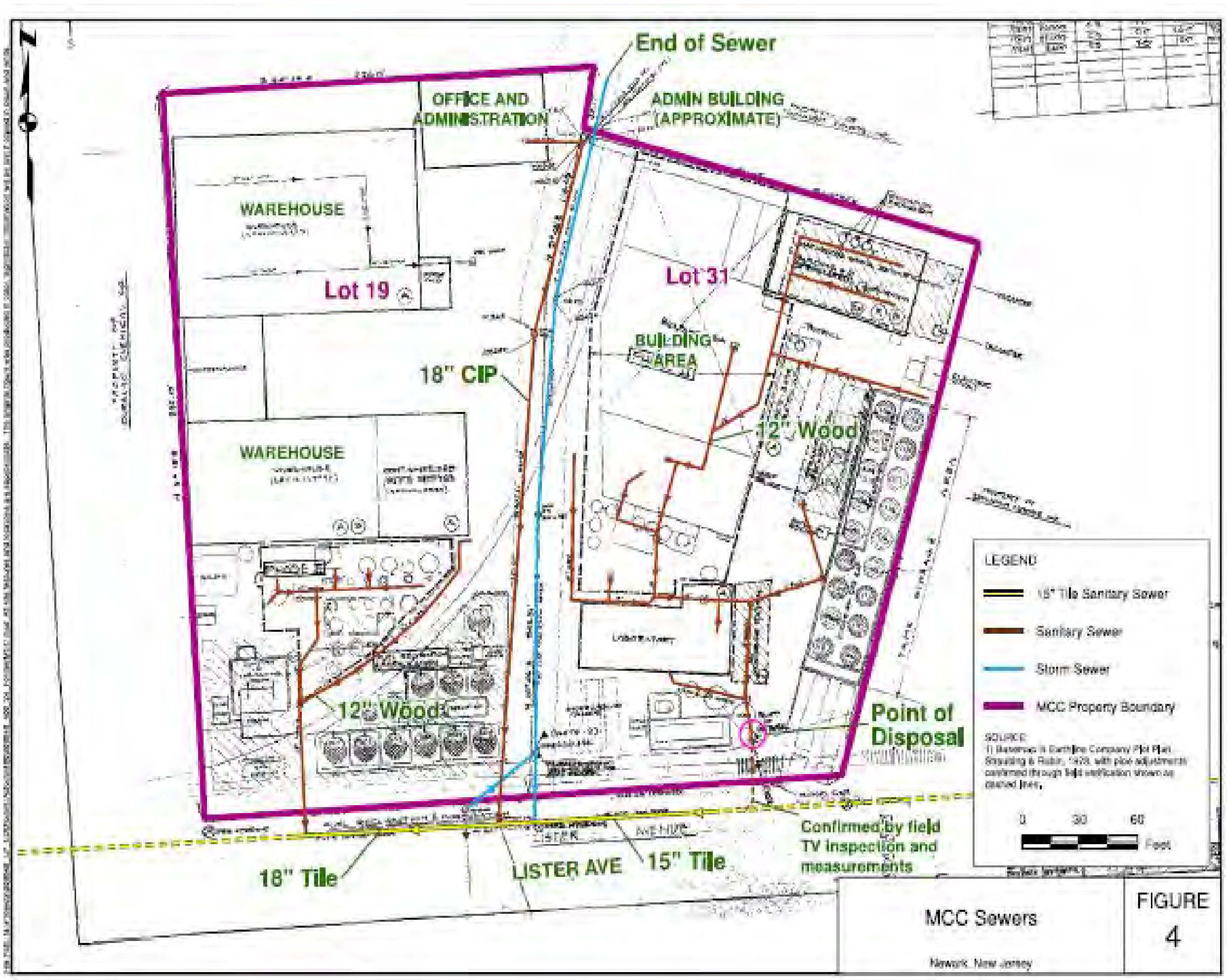
According to the deposition of Solomon Koved dated March 24, 1994, cement floor troughs in process areas exited the building underground. The troughs carried process water, spills, cooling water from condensers or cooling reactors, steam condensation, and other liquid (PAS-00004073). The troughs ran underground at the building's boundary approximately 25 feet to a 4-foot diameter sewer box. The sewer then ran toward Lister Avenue (PAS-00003962; PAS-00004076). Koved further explained that two lines entered the sewer box underground (i.e., the sanitary sewer and the process waste) (PAS-00004083).

Koved stated he discovered the convergence of the sewer with the sewer box when the ground started sinking, and they excavated to find the sewer line had deteriorated. He described the sewer line as likely a 10-inch line that required replacement as the ground continued to sink due to material deteriorating the pipes. Finally, a wooden pipe was manufactured that never deteriorated (PAS-00004085).

According to the report of Michael F. Domenica, P.E, dated August 1, 2017, the sanitary sewer line under Lister Avenue flowed westward and connected directly to the PVSC Newark Bay Waste Water Treatment Plant (NBWWTP) via the Brown Street Branch Interceptor (BSBI). The BSBI was constructed in 1921 and conveyed all its flow to the NBWWTP. Sewage in the BSBI did not discharge to the Passaic River, even during storm events. There was no hydraulic connection that would allow flow from the BSBI to discharge to the Brown Street Combined Sewer Overflow (CSO) (PAP-00027671).

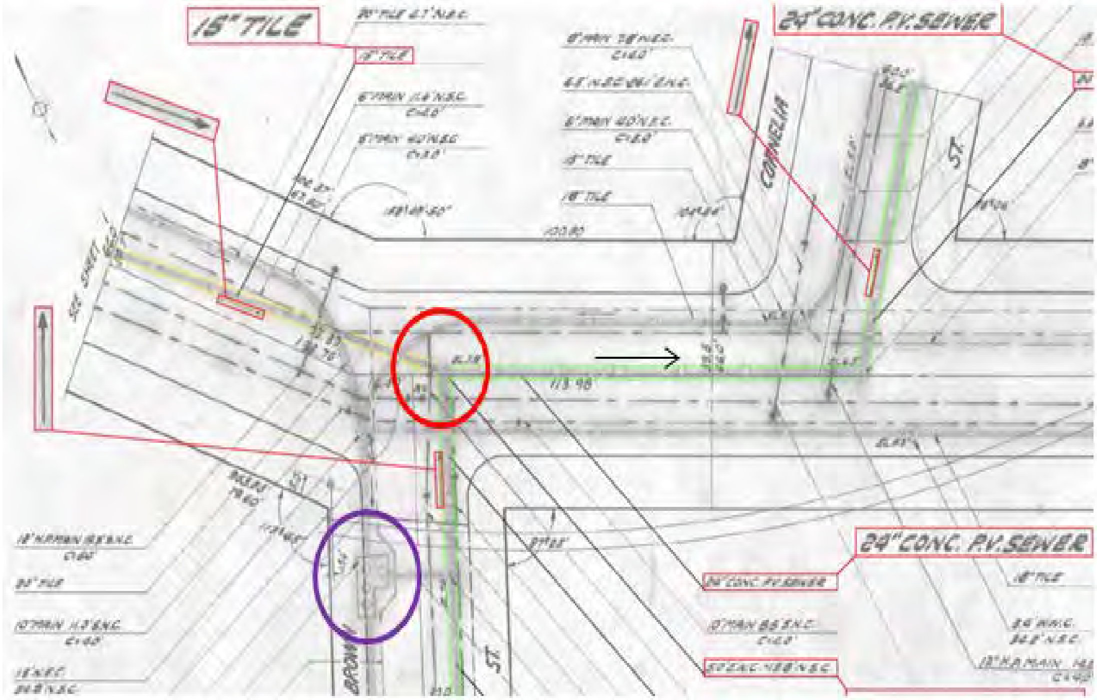
According to a letter from the EPA to Chris-Craft, dated March 13, 1996, when Earthline Company (which occupied the facility in 1977) applied for a sewer connection permit in 1977, one of the stipulations was that the "known illegal cross connection between the storm sewer and sanitary sewer on Lister Avenue…be eliminated prior to commencing operations" (PAS-00003913). The application itself documented the stipulation that Earthline shall provide sanitary sewerage and storm drainage facilities that prevents spilled material from entering municipal sewers. The design required the installation of a special valve to remain closed during dry weather and opened only to allow drainage of storm water runoff (PAS-00106777). According to the Export Report of Michael F. Domenica, P.E., dated August 1, 2017, although the available evidence is incomplete, it

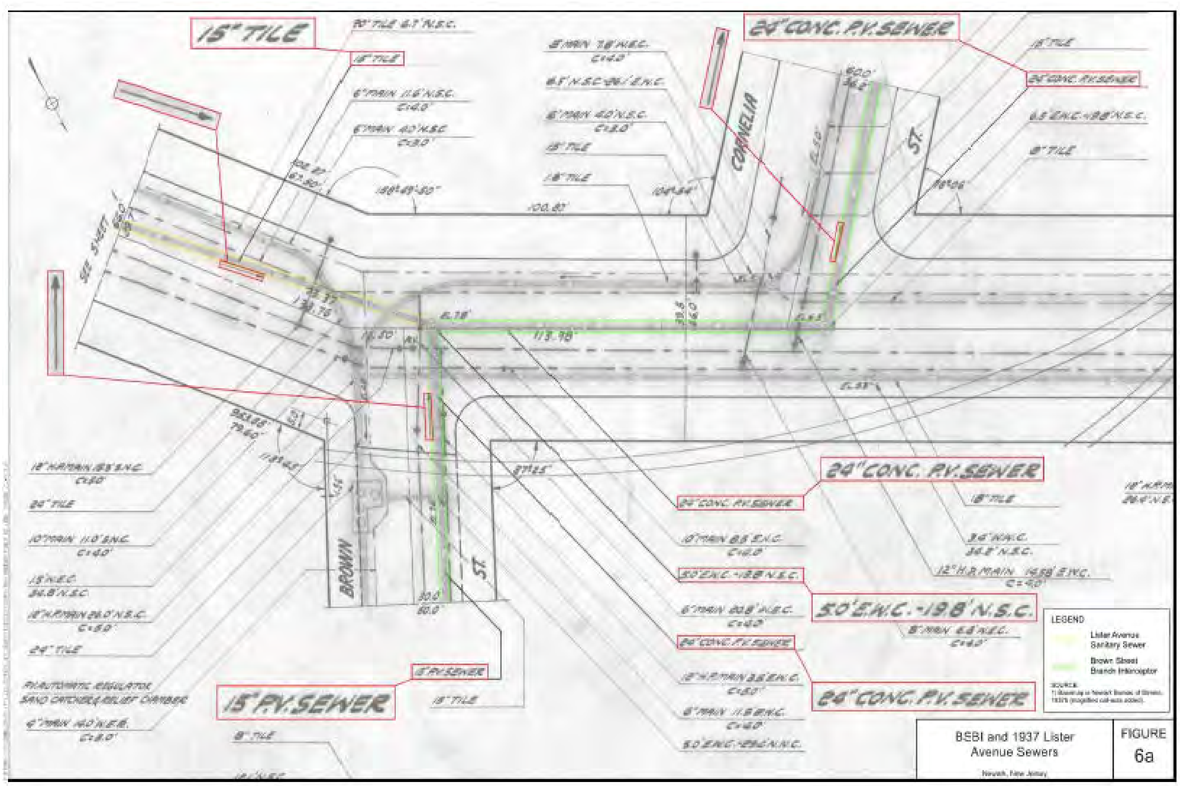
implies that the "cross connection" was the storm sewer under the service road between Lots 31 and 19 and was connected to the 1970 sanitary sewer under Lister Avenue. The result of such a connection would have been to direct stormwater from the service road to the BSBI and Newark Bay Waste Water Treatment Plant, not to the Passaic River (PAP-00027672). This storm sewer line is available below.



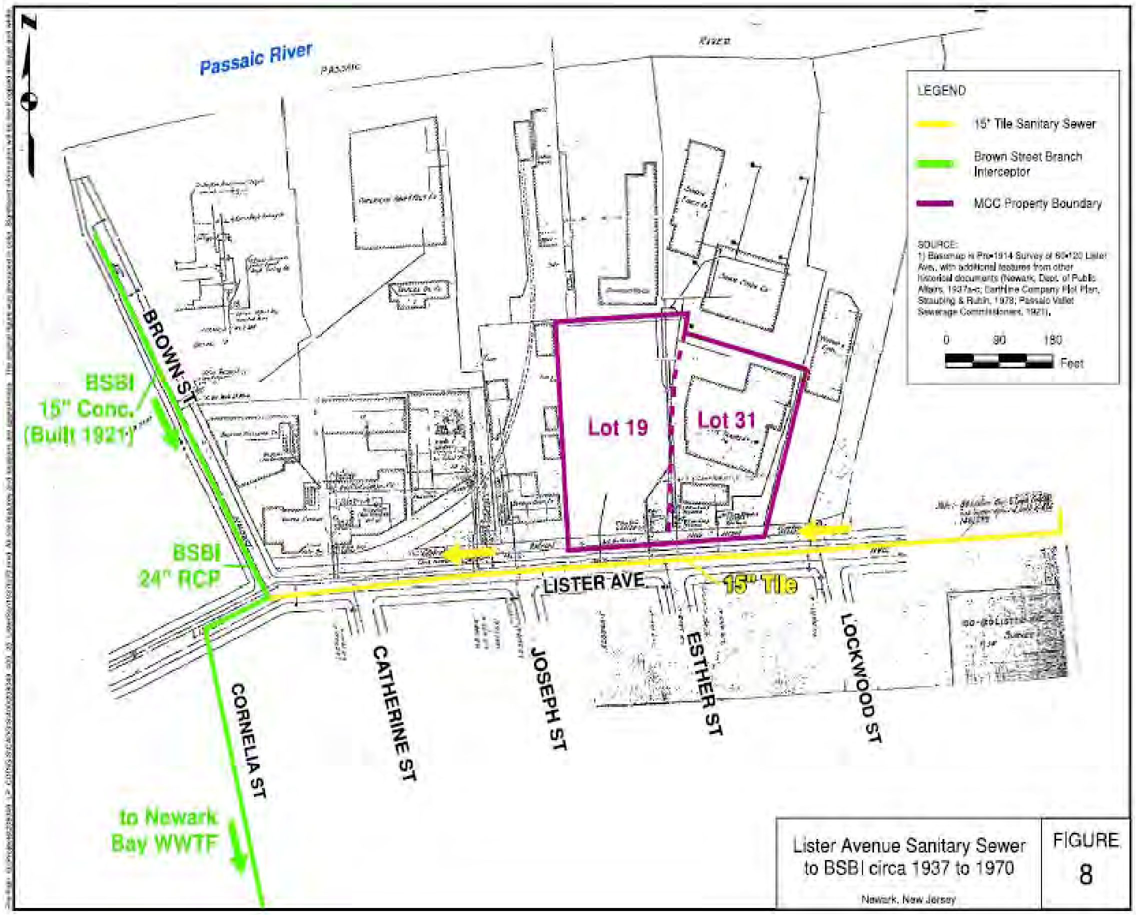
(PAP-00027688)

According to the Brown Street Branch Interceptor Evaluation, dated July 1981, and prepared by Clinton Bogert Associates for PVSC, the combined discharge system in the area bounded by Chapel, Lister, Lockwood Streets and Raymond Boulevard discharged into a 24-inch section of the Brown Street Branch Interceptor. The Evaluation states that "When the interceptor was completed, a regulator was constructed at the Brown Street to permit bypassing of excessive wet weather flows" (PAP-00056472).





(PAP-00027691)



(PAP-00027693)

According to the December 18, 2001 *Potential PCB Sources to Passaic River Study Area Volume 1,* prepared for Chemical Land Holdings, Inc. by EI Group, Inc., during wet weather, overflow discharged through the Brown Street regulator to the Passaic River until the regulator was sealed in approximately 1970 (PAS-00124570). According to the Brown Street Branch Interceptor Evaluation, separating the storm from sanitary sewer systems was completed between the 1930s and 1970s (PAP-00056472).

The Expert Report of Michael F. Domenica, P.E. dated August 1, 2017, stated that the detailed historical engineering drawings published in 1937 by the Newark Department of Public Affairs, show that when MCC commenced operations in 1939, a single 15-inch sanitary sewer existed under Lister Avenue in front of the Property, and flowed to the west. This is the sanitary sewer line to which Montrose's process wastewaters were discharged from 1939 until the line was replaced in 1970. The sanitary sewer line beneath Lister Avenue (to which the facility discharged) was connected to the BSBI (PAP-00027677).

The BSBI eliminated discharges of sanitary sewage to the Passaic River at Brown Street during dry weather. During storm events, overflows from remaining combined sewers continued to occur at the Brown Street CSO until the full-scale sewer separation project

completed in 1970 eliminated all overflows to the Brown Street CSO. However, as shown above, the sanitary sewer on Lister Avenue serving the MCC operations at the Property discharged to the BSBI beginning in or before 1937, and did not connect to any combined sewers and, thus, did not contribute sanitary wastewater to the Passaic River (PAP-00027678).

The Expert Report of Michael F. Domenic stated that the BSBI was separate from the Brown Street CSO. Although, the 15-inch sanitary sewer line under the northern side of Lister Avenue (to which Montrose discharged its process wastewaters) was connected directly to the BSBI (and then to the Newark Bay Waste Water Treatment Plant), a second combined sewer line ran under a portion of the southern side of Lister Avenue and connected to the Brown Street CSO. In particular, the 1937 drawings show that, under a portion of the southern side of Lister Avenue, beginning just west of Lot 31, a 15-inch tile sewer line was located to the south of the 15-inch sanitary sewer. This second sewer line was a combined sanitary and storm sewer that drained the area south of Lister Avenue (but not the area north of Lister Avenue, where the Property was located). This combined sewer line connected to the Brown Street CSO, via the Brown Street Regulator. The regulator is shown on the east side of Brown Street, just north of the intersection with Lister Avenue. All dry weather wastewater flows and combined wastewater and stormwater from small rain storms were directed by the Brown Street Regulator to the BSBI. Due to high flows during large storms, a portion of the combined sewer flows would overflow the regulator and be released to the Brown Street CSO. However, there was no opportunity for flow from the 15-inch sanitary line under Lister Avenue, to which Montrose discharged, to be released to the Brown Street CSO because the sanitary sewer under Lister Avenue connected directly to the BSBI downstream of the connection to the Brown Street Regulator (PAP-00027679).

Direct Discharge

According to a summary of an interview with Oscar Randell who worked for Montrose Chemical Company at Lister Avenue between 1951 and 1977, a 4-inch outflow pipe ran directly to the Passaic River. He personally observed tricresyl phosphate wash water discharge into the outfall pipe that discharged directly into the Passaic River. At one time in 1957/58, he saw the entire run of product (approximately 2,000 gallons) discharge into the Passaic River. No incident report was made, but the worker was fired (PAS-00003915-16).

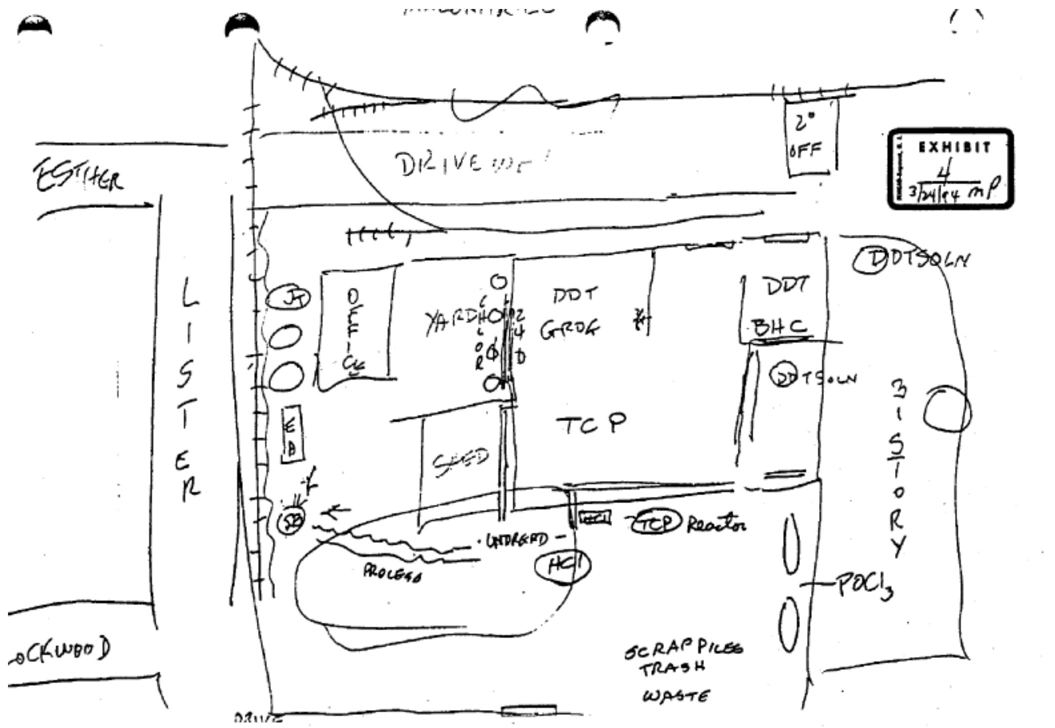
Randell also signed an affidavit dated July 21, 1993, stating that the sewer lines discharged into the Passaic River between 1952 and 1977 or 1978 at the end of the facility driveway on the former Thomasett property. Process water batches would discharge in volumes of 5,000 to 10,000 gallons at a time, and it was reported that they would have to meter the flow so it would not cause back-ups into other sewer trenches on the facility. The discharge lines to the river were sealed after the facility was acquired by IMC Chemicals Group in 1978 (PAS-00106689). The Montrose Chemical Company Facility was located 650 feet south of the Passaic River (PAS-00107021).

According to the interview of Randell dated January 25, 1994, he and other workers would routinely dump five-gallon pails of waste cresol into the Passaic River (PAS-00003917).

According to Benjamin Rothberg's February 21, 2006 Affidavit, there were no pipes discharging from the facility to the river and it made no sense for employees to hand carry buckets of process waste to the river. He never observed nor had any other knowledge of any employees carrying buckets of waste from the facility across the neighboring properties to the river. Employees were not instructed to dump wastes into the river, which was not visible from the plant, and he never saw or heard about anyone having done so (PAP-00027867-68). "I cannot conceive of any reason that anyone would have done such a thing, when the troughs and other disposal areas at the facility provided a ready means for waste disposal and were within approximately fifteen feet of any location within the facility. Nor was waste cresol, which Mr. Randell said was in the buckets, generated at the Newark Plant." (PAP-00027868).

According to the deposition of Benjamin Rothberg dated February 21, 2006, process wastewater was directed to the pre-existing sanitary sewer line with had been installed beneath Lister Avenue long before MCC [Montrose] began using the facility (PAP-00027865). Any spills from production operations, to the extent they could not be recovered and processed, would have been directed to tile-lined troughs in the floor. These troughs were connected to recovery trap tanks, and only after passing through these tanks did the effluent go to the PVSC (PAP-00027866). Rothberg also stated in his February 23, 2011 deposition that there was no accident in the 1950s in which TCP was discharged to the river, and that any such accidental discharge "would have wound up in the ditch –not – acid-lined trenches and eventually wound up in two separator tanks and eventually into the sewer" (PAP-00027770). In addition, Rothberg reported rainwater wound up just overflowing the property and going to Lister Avenue where it would go down the storm drain, or it would go into ditches and wind up in trap tanks by the Office Building before it went to the sewer (PAP-00027767, 771).

According to the March 24, 1994 Solomon Koved Deposition, Mr. Koved, who worked in production according to Mr. Radan (PAS-00075281), "our sewers came together -- most of them were surface troughs, so if there was any spillage, it could be squeegeed into the trough, and so was the process water conducted to the troughs. And there were -- there was a network of troughs around the plant, and they all -- they didn't all come together. They would join one another, and I know in a general way the configuration of the troughs, but eventually, went underground -- and for a short distance and emerged in what we refer to as a sewer box, which was a four-foot diameter wooden containment that was sunk into the ground to receive sewage or process water, and it included -- the sanitary waste from the office building all joined in the sewer box, which was approximately ten feet from the north margin of Lister Avenue, and it went in the direction of Lister Avenue" (PAS-00003962-63). The "sewer line would have to take a u-turn not to go to Lister Avenue, which was very unlikely" (PAP-00004091).



(PAS-0004113)

Mr. Koved additionally stated “All process waste went to the sewer if it was liquid and to a waste pile if it was solid.” (PAS-00004041) and that there were no troughs or pipes running along the driveway that ran to the river, and that he had “no knowledge whatsoever” of any “lines that ran directly from the plant directly to the river.” (PAS-00004086). Koved also reported that there was a driveway from the Baldwin facility that extended to the river, but he never went there, and to his knowledge no one else – “I never saw any of our employees go there. There was no motivation for going there of a business nature” and that “breaks were too short to make that walk” (PAS-00003928).

According to the February 2, 1994 Summary of interview with Kelsey Brown, who worked for Montrose from 1951 to 1963, primarily as a shift supervisor, reported he never went to the river and therefore did not observe outfall pipes or drains at that location, and that all plant sewers went to the city sewer system (PAS-00075289).

According to the June 8, 1994 Summary of Interview with Thelbert Cameron, who worked for Montrose from 1957 to 1972, primarily as a foreman, also reported that the drains at the plant went to a holding tank located at the front of the facility (PAS-0075286).

According to the June 8, 1994 Summary of Interview with Peter Lewesky, who worked for Montrose from 1949 to 1972, primarily as a foreman, stating that “The drainage system consisted of collection troughs. They were connected to the city system in front of the facility on Lister Avenue”. He did not “recall any connections directly to the Passaic River, however, the river would overflow periodically and our plant would be flooded” (PAS-00075284).

According to the April 27, 1995 Interview with George Radan, Mr. Radan did not recall employees walking to the Passaic River during meals or breaks on a regular basis, but he did remember going there himself on occasion (PAS-00075282).

According to a March 2018 Documentation of Environmental Indicator Determination, prepared by Tetra Tech and approved by EPA and NJDEP on May 30, 2018, there are no current or known historical Site-related surface or waste water conveyances and / or discharge pipes which discharge to the Passaic River (PAP-00353349, 62).

According to a letter dated October 25, 1991, from Chemical Waste Management, in 1991 while upgrading the facility, construction efforts discovered a floor sump near the laboratory area that did not have a bottom and appeared to have been constructed that way (PAS-00107012). There is no date or information on when the sump was installed based on file material provided. Available references did not state what was discharged to the sump.

According to the December 18, 2001 *Potential PCB Sources to Passaic River Study Area Volume 1,* prepared for Chemical Land Holdings, Inc. by EI Group, Inc., a 1977 letter noted that the facility property contained four sewers: two 12-inch wooden sewers, one 12-inch clay pipe and one 24-inch cast iron sewer. A portion of the surface water drainage was routed to two 12-inch wooden sewers by open channels, and inspection in 1977 after 21CFA's predecessors had vacated the property in 1972 identified "polluting material" in the 12-inch storm line (PAS-00124569-70).

According to the December 18, 2001 *Potential PCB Sources to Passaic River Study Area Volume 1,* prepared for Chemical Land Holdings, Inc. by EI Group, Inc. storm sewers near Montrose would flow east and through the Benjamin Moore property and then directly to the Passaic River. Prior to 1972, storm sewers flowed in the opposite direction to the Brown Street outfall at the Passaic River on Sherwin Williams' property (PAS-00124570).

According to the report of Michael F. Domenica, P.E. dated August 1, 2017: (i) "process wastewater and spilled liquids were directed through a network of lined troughs to a network of sewer piping that discharged to a sanitary sewer line under Lister Avenue" (PAP-00027671-72) and then directly to the PVSC treatment plant without opportunity to be diverted to the Passaic River via combined sewer outfall (CSO) or other bypass (PAP-00027674-76); and (ii) "surface stormwater runoff from [Montrose]'s production areas flowed to the network of lined troughs that discharged through the sanitary sewers described above to the [PVSC treatment plant] (and not to the Passaic River)" (PAP-00027672). Mr. Domenica also explained that a storm sewer line that drained storm flows from the service road that bisects the property was connected to the sanitary sewer line under Lister Avenue, such that these storm water flows also would have been conveyed to the PVSC treatment plant (not to the Passaic River) (PAP-00027681-82).

Flooding

In his 1994 interview, former employee Oscar Randall reported he experienced flooding of the plant by the Passaic River "sometime between 1958 and 1960" (PAS-00003917).

Randall noted in a 1993 Affidavit that when he was first employed at the facility, much of the property was unpaved and the unpaved area was heavily contaminated with spilled substances. The soil was jet black and smelled strongly of cresol, and the groundwater was discolored and smelled. Often during periods of high tide the facility would flood, and water runoff from the facility drained to the river (PAS-00106689).

According to the June 6, 1994 Summary of interview with Thelbert Cameron, he remembered in winter (unknown year) "having to leave the plant because of flooding. The plant was completely flooded with water from the Passaic River" (PAS-00075287).

According to the April 27, 1995 Interview with George Radan, Mr. Radan did not recall any significant flooding at the facility. He did mention that on occasion the sewers would back up causing some small scale flooding at the facility (PAS-00075282).

According to the February 23, 2011 Deposition of Benjamin Rothberg, there was a flood, one year, in all the years he was there, but the flow was toward Lister Avenue (PAP-00027771).

According to the March 24, 1994 Solomon Koved Deposition, there was one incident of flooding that occurred around 1950 when there was a hurricane, and probably in the fall, all of the plant from the river to halfway up Esther or Lockwood Street was under a substantial amount of water (PAS-00004091).

According to the *2015 Remedial Investigation Report* by Tetra Tech, "floods have occurred at the Site, including major flooding caused by Hurricane Sandy, which occurred between October 22 and October 31, 2012. It is important to note that off-Site soil delineation sampling associated with the recent RI activities all occurred after Hurricane Sandy, and the limited off-Site impacts observed in that sampling indicates that the major flooding during Hurricane Sandy did not cause substantial off-Site contaminant migration, and likewise indicates that any previous floods did not cause substantial off-Site contaminant migration." (PAP-00026474).

Spills

Randall noted in his Affidavit that when he was first employed at the facility, much of the property was unpaved and the unpaved area was heavily contaminated with spilled substances. The soil was jet black and smelled strongly of cresol, and the groundwater was discolored and smelled (PAS-00106689).

According to the *June 1995 Draft Supplemental Remedial Investigation Report*, between 1914 or earlier through the mid-1980s, several rail lines crossed the facility. Spills may have occurred and contributed contamination. The rail lines were paved over when their use was discontinued. Buried ballast and ties contained wood preservative and heavy oils, and surficial fill material was found to contain semi-volatile contamination likely from rail lines through the area (PAS-00107038).

6. Regulatory History/Enforcement Actions

Inspections

No information on site inspections was identified in the available file materials.

Violations

No information on violations was identified in the available file materials.

Permits

No information on permits was identified in the available file materials.

7. Response Actions

Characterization Activities

According to a March 2018 *Documentation of Environmental Indicator Determination for 100 Lister Avenue* by Tetra Tech, the following characterization activities have taken place at the facility (PAP-00353338-40):

- *Remedial Investigation Report*, December 1993
- *Draft Supplemental Remedial Investigation Report*, June 1995
- *Draft Supplemental Remedial Investigation Report*, June 1996
- *Additional Sample Event Reports*, May 1999 and August 2000
- *Additional Remedial Investigation and Remedial Action Selection*, November 2001
- *Remedial Action Work Plan*, November 2002
- *Supplemental Remedial Investigation Report*, April 2009
- *Remedial Investigation Report*, December 2015
- *December 2015 Remedial Investigation Report Addendum*, June 2016
- *Remedial Action Selection Report / Remedial Action Work Plan*, June 2017

Sewer

There is no information regarding sewer sampling in the available file material.

Soil

The December 1993 *Remedial Investigation Report* results of the sampling activities stated that the principal constituents detected in soils were volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and trace metals. A letter from NJDEP dated November 29, 1994 regarding a work plan for subsequent remedial investigation (RI) efforts stated that “the Department agrees that the metals contamination at the site is most likely due to fill material from local coal gasification

plants that was placed in the original marshlands." Therefore, metals were not a focus of subsequent RI activities (PAP-00353338).

The June 1995 *Draft Supplemental Remedial Investigation Report* was conducted in response to NJDEP comments letters circa 1994. The scope included surficial fill sampling, laboratory analysis for target compound list/target analyte list VOCs and pesticides. Soil analytical results supported that the surficial fill was impacted by VOCs and pesticides, and that in some locations the observed impacts were within the saturated zone, indicating that the impacted soils were in direct contact with the groundwater (PAP-00353338). The investigation recommended engineering controls to limit future land use and construct a barrier to prevent direct contact with surficial fill materials. The recommendations included a deed restriction to protect the integrity of impervious surfaces (PAS-00107125).

The May 1999 and August 2000 *Additional Sampling Event Report* was conducted in response to NJDEP comments. Soil samples were collected for VOCs, SVOCs, pesticides/PCBs in 1999. The 1999 report stated that impacts to saturated soil were detected in the southeast corner of the site (PAP-00353339).

The November 2001 *Additional Remedial Investigation and Remedial Action Selection Report* concluded based on discussions with NJDEP that complete remediation of soil at the site would be technically impracticable, given the large extent of soil impacts horizontally and vertically and the potential presence of residual product. Thus, remediation objectives were developed to prevent human and ecological exposure to impacted soils and groundwater (engineering and institutional controls); and to reduce peak concentrations of contaminants leaving the Site to concentrations that reduce risks to potential down-gradient receptors (PAP-00353339).

According to the December 2015 *Remedial Investigation Report,* previously detected PAHs were considered to be Historic Fill contaminants of concern at the site (PAP-00026451). Copper and mercury were ruled out as contaminants of concern because concentrations were only detected above groundwater water quality standards in 1996 sampling events and not in subsequent sampling events (PAP-00026455). Dioxins were ruled out as contaminants of concern, as there was no evidence of "gross" contamination. Dioxin contamination above 1 part per billion was found related to wind dispersion and traffic from known hot spots on the Diamond Alkali property (PAP-00026457). Two confirmation samples collected in 1993 from the northwest corner of the site detected no polychlorinated dibenzofurans or dioxins (PAP-00026458). The highest concentrations in soil were typically located in the eastern parcel. Soil impacts above applicable standards were generally limited to above and within the Meadow Mat. Historic Fill was considered the source of PAHs and metals (PAP-00026475).

According to the Remedial Action Selection Report / Remedial Action Work Plan, dated June 2017, 4,4'-DDT and dieldrin were not detected in any groundwater sampling conducted in 2016 (PAP00027209). In response to NJDEP's requirement for pesticide delineation, the following was noted: Dieldrin was not detected in any monitoring well in 2016; therefore, its extent was delineated (PAP-00027223). 4,4'-DDT, 4,4'-DDE and 4,4'-DDD were believed to be vertically delineated (PAP-00027223).

Remedial Activities

According to a March 2018 *Documentation of Environmental Indicator Determination for 100 Lister Avenue* by Tetra Tech, soil delineation has been completed in a manner consistent with NJDEP's Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil. Soil sampling at the site for delineation was focused at the perimeter and off-site soil sampling locations, as the entire site was considered one contaminated AOC and delineation of individual parameters within the site boundaries was considered impracticable (PAP-00353348). An Ecological Evaluation concluded that no complete pathways exist between site contaminants and surface water or sediment (PAP-00353349).

According to a March 2018 *Documentation of Environmental Indicator Determination for 100 Lister Avenue* by Tetra Tech, all contaminants in surficial fill groundwater were sufficiently delineated. Site-related COCs have been detected in groundwater on adjacent properties to the north, east, and west at concentrations above "groundwater quality standards" (GWQS), though groundwater delineation efforts conducted during remedial investigation activities showed that the highest concentrations of these COCs in the surficial fill were detected in on-site groundwater and that attenuation to concentrations below GWQS would occur within 100 yards of the site boundary (PAP-00353350).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file materials.

ALDEN LEEDS, INC.

Facility Name, Address and Size: Alden Leeds, Inc., 100 Hackensack Avenue, South Kearny, New Jersey (PAS-00000007; PAS-00000045). Site acreage not available. In 1994, the facility had 20 full time and 6 part time employees working 250 work days per year at the 100 Hackensack Avenue location (PAS-00000007-9).

1. **Business Type:** Repackaging of swimming pool chemicals (PAS-00000009).

2. **Time Period of Ownership/Operations**

   Operator: September 1993 – December 2005
   Owner: Not Provided (PAS-00000007-8; PAS-00020963)

   According to a letter prepared by Whitman Breed Abbott & Morgan, on behalf of Alden Leeds, dated August 9, 1996, Alden Leeds has been owned by Leeds Terminal, Inc. and operated by Q-Pak "since the early 1960s" (PAS-00000028). Based on review of available file material, it is unclear if Alden Leeds is still owned and operated by these entities.

   Alden Leeds incorporated in New York on July 25, 1959 (PAP-00087883-6). The facility has operated at 100 Hackensack Avenue; however, based on review of available file material, periods of operation are unclear (PAS-00000007; PAS-00000045).

3. **Operational History/ COC Use and Presence at the Facility**

   In September 1993, it was reported in a NJDEP Investigation Memoranda that Alden Leeds received at the 100 Hackensack Avenue address "bulk product from outside vendors and presses this material into various sized tablets and granules. The finished product was then packaged into one quart to five gallon containers. The only hazardous waste that this facility would generate is from floor sweepings of the chlorinating agents." (PAS-00000045).

   A July 1994 *PVSC Application for a Sewer Connection Permit* for the 100 Hackensack Avenue address, stated that raw materials were reported to be trichloro-s-triazine trione, soda ash, and dichloro-s-triazine trione. At that time the facility had 20 full time and 6 part time employees working 250 work days per year at the 100 Hackensack Avenue location (PAS-00000007-9).

4. **Identified COCs**

   - PAHs (possible use)

   PAHs

   According to a 2017 C*ertification of Lindsay A. Brown, Esquire in Support of Occidental Chemical Corporation's Opposition to Repsol S.A.'s Motion for Summary Judgment on its Spill Act Contribution Counterclaim Against Occidental Chemical Corporation*, Alden

Leeds utilized, stored, and/or handled Hazardous Substances and other compounds at the Alden Leeds Kearny Site (100 Hackensack) including, but not limited to copper-based pesticides (PAP-00165183; PAP-00165236). No documentation was found in the available files to support this assertion.

There is no information regarding soil-sampling data in the available file material.

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP[1].

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury[2]. Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards[4]**.**

There is no information regarding soil-sampling data in the available file material. No information is available regarding when fill materials were placed on the facility site.

5. COC Pathways

Combined Storm and Sanitary Sewer

According to a memorandum prepared by the NJDEP, dated September 9, 1993, floor sweepings of chlorinated agents were added to the facility waste water treatment system and discharged to the combined sewer system approximately once a week (PAS-00000045).

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[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Oher Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[4] NJDEP Table 4-2 (PAHS and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: - PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

In 1994, Alden Leeds applied for a Passaic Valley Sewer Commission (PVSC) Sewer Connection Permit for the 100 Hackensack Avenue location which indicated that cooling water was discharged to the "storm sewer/river/ditch" and sanitary and process wastewater was discharged to the sanitary/combined sewer (PAS-00000007-08).

6. Regulatory History/Enforcement Actions

Inspections

There is no information regarding inspections in the available file material.

Permits

In 1994, Alden Leeds applied for a Passaic River Valley Commission Sewer Connection Permit for the 100 Hackensack Avenue location. It was reported in the application that the facility did not have a NPDES permit. Cooling water was reported to be discharged to the "storm sewer/river/ditch." Water usage included an estimated 300,000 gallons of process waste water released to the sanitary/combined sewer and an estimated 1,100,000 gallons of cooling water released to the storm sewer/river/ditch. The daily flow to Outfall 1 was estimated to be 1,250-2,500 gallons and 300-600 gallons to Outfall 2 (PAS-00000007-08, 11). Available references did not include information on discharge monitoring requirements.

Violations

PVSC presented an Award of Excellence to Alden Leeds-Hackensack Ave. for operations from January 1, 2002 through December 31, 2005 without incurring a reporting or effluent violation (PAP-00097620; PAS-00020963).

7. Response Actions

There is no information regarding response actions in the available file material.

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

ALDEN LEEDS, INC.

Facility Name, Address and Size: Alden Leeds, Inc., 55 Jacobus Avenue, Kearny, New Jersey (PAS-00000007; PAS-00000045).

1. **Business Type:** Repackaging of swimming pool chemicals (PAS-00000009).

2. **Time Period of Ownership/Operations**

   Operator: September 1993 – December 2005
   Owner: Not Provided (PAS-00000007-8; PAS-00020963)

   According to a letter prepared by Whitman Breed Abbott & Morgan, on behalf of Alden Leeds, dated August 9, 1996, Alden Leeds has been owned by Leeds Terminal, Inc. and operated by Q-Pak "since the early 1960s" (PAS-00000028). Based on review of available file material, it is unclear if Alden Leeds is still owned and operated by these entities.

   Alden Leeds incorporated in New York on July 25, 1959 (PAP-00087883-6). The facility has operated at 55 Jacobus Avenue; however, based on review of available file material, periods of operation unclear (PAS-00000007; PAS-00000045).

3. **Operational History/ COC Use and Presence at the Facility**

   In September 1993, it was reported in a NJDEP Investigation Memoranda that Alden Leeds 55 Jacobus Avenue address was visited and it was used for office space and storage of raw materials and finished products, and no hazardous waste was generated at this facility (PAS-00000045).

4. **Identified COCs**

   - PAHs (possible use)

   PAHs

   There is no information regarding soil-sampling data in the available file material.

   Historic Fill

   The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP[1].

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury[2]. Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards[4].

There is no information regarding soil-sampling data in the available file material. No information is available regarding when fill materials were placed on the facility site.

5. COC Pathways

Combined Storm and Sanitary Sewer

There is no information regarding COC pathways in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

According to a "Field Investigation" form prepared by the Hudson Regional Health Commission, dated April 21, 1987, a "violation order" would be issued to Alden Leeds for the connection of a septic holding tank to the storm drain system at the 55 Jacobus Avenue facility (PAS-00000047).

Permits

There is no information regarding permits in the available file material.

Violations

There is no information regarding violations in the available file material.

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[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Oher Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[4] NJDEP Table 4-2 (PAHS and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: - PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

7. Response Actions

No information on response actions at the Alden Leeds facilities was documented in the available file material.

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

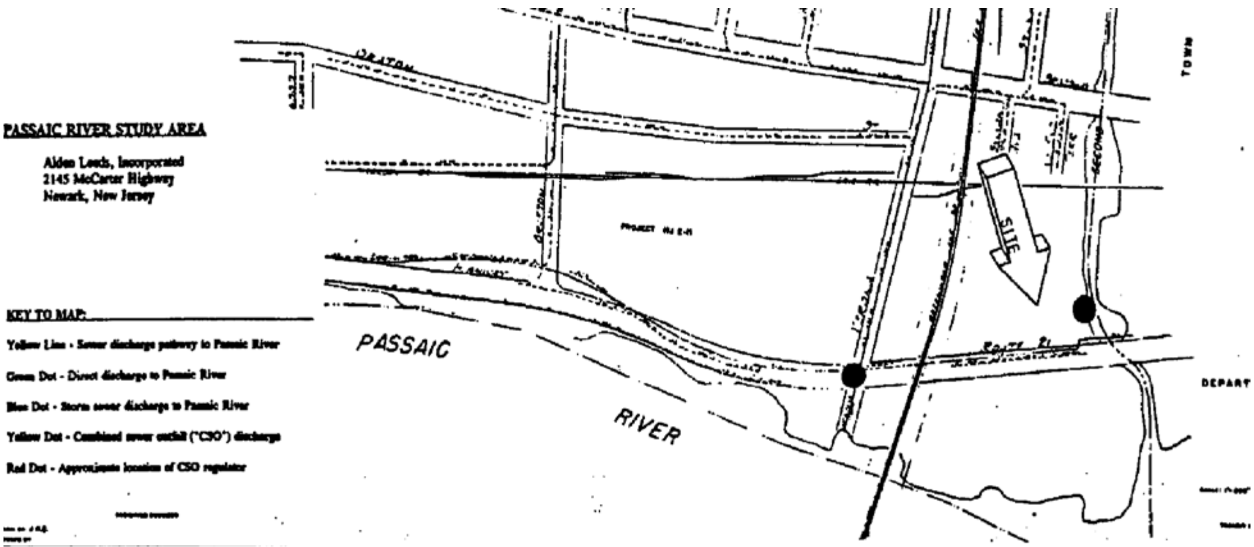
Diamond Alkali OU2 Allocation

ADR Confidential

Facility Data Report

ALDEN LEEDS, INC.

Facility Name, Address and Size: Alden Leeds, Inc., 2145 McCarter Highway, Newark, New Jersey (PAS-00000022)



1. **Business Type:** Repackaging of swimming pool chemicals (PAS-00000009).

2. **Time Period of Ownership/Operations**

   Operator: July 1964 – July 1971
   Owner: July 1961 – July 1971(PAP-00087876)

   According to a letter prepared by Whitman Breed Abbott & Morgan, on behalf of Alden Leeds, dated August 9, 1996, Alden Leeds has been owned by Leeds Terminal, Inc. and operated by Q-Pak "since the early 1960s" (PAS-00000028). Based on review of available file material, it is unclear if Alden Leeds is still owned and operated by these entities.

   Alden Leeds incorporated in New York on July 25, 1959 (PAP-00087883-6). Alden Leeds operated at 2145 McCarter Highway from approximately July 1961 to July 1971 when a fire destroyed the facility (PAS-00000025).

3. **Operational History/ COC Use and Presence at the Facility**

   Alden Leeds operations included the repackaging of swimming pool chemicals (PAS-00000009). In a 1996 104(e) response letter, it was reported that operations at the 2145 McCarter facility were limited to "pressing chlorine tablets and the packaging of cyanuric acid, soda ash, sodium carbonate, sodium bisulfate and trichloroisocyanuric acid for use in the treatment of swimming pool water" (PAS-00000025).

4. Identified COCs

- PAHs (possible use)

PAHs

According to a memorandum prepared by the NJDEP, dated September 9, 1993, "The only hazardous waste that this facility would generate is from floor sweepings of the chlorinating agents (D003 - reactivity). Other hazardous waste that were shipped off site were generated due to a clean-up of soil contaminated with chromium and oil in 1989 and 1992" (PAS-00000045). Based on review of available file material, the source of soil contamination is unclear. However, PAHs are a component of oils.

There is no information regarding soil-sampling data in the available file material.

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP[1].

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury[2]. Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards[4].

There is no information regarding soil-sampling data in the available file material. No information is available regarding when fill materials were placed on the facility site.

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[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Oher Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[4] NJDEP Table 4-2 (PAHS and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: - PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

5. COC Pathways

Combined Storm and Sanitary Sewer

According to a memorandum prepared by the NJDEP, dated September 9, 1993, floor sweepings of chlorinated agents were added to the facility waste water treatment system and discharged to the combined sewer system approximately once a week (PAS-00000045).

There is no information regarding COC pathways in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

On July 26, 1971, a fire destroyed the Alden Leeds building at the 2145 McCarter Highway site, and resulted in the release of "a large quantity" of chlorinated cyanuric acid into the Second River (PAS-00000022). According to Alden Leeds, the fire resulted from the spontaneous decomposition of trichloroisocyanuric acid used at the facility (PAS-00000027).

Permits

There is no information regarding permits in the available file material.

Violations

There is no information regarding violations in the available file material.

7. Response Actions:

There is no information regarding violations in the available file material.

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

ALLIANCE CHEMICAL, INC.

Facility Name, Address and Size: Alliance Chemical, Inc. (Alliance), 339-355 Avenue P, Newark, New Jersey (previously referred to as 309-327 Avenue P) (PAS-00129641); Block 5020, Lots 3, 6, 8, 12 and 136 (PAP-00065688). In 2002, the site was approximately 7 acres in size (PAP-00065689); however, in 1990 it was described as encompassing 8.4 acres (PAP-00066461). A 1972 Waste Effluent Survey noted the facility employed 45 people working five days per week and three shifts per day (PAP-00066087). According to a January 24, 1990, *General Information and Site History* document, the site was operational 24 hours per day (PAS-00049995).

1. **Business Type:** Manufacturer of specialty organic intermediates (such as dyes, pigments and diazo compounds (PAS-00129646) for use in the textile, paper and pigment industries (PAS-00050252).

2. **Time Period of Ownership/Operations**

Operator: 1945 or 1958 – 2001 (PAS-00129641)
Owner: 1965 – March 23, 2006 (PAP-00216720)

1945: Sun Chemical first began developing the facility site (PAP-00066461).

1946: Leases to the facility were executed with Tiffany Chemical Company and Security Paint and Varnish, both companies manufactured paints, varnishes, lacquers, dyes and oils (PAS-00129641).

1958: Plum Point Realty conveyed Lot 8 (in 1958) and Block 5020 (in 1957) to Alliance Color and Chemical Company (PAS-00129641).

1964: Sun Chemical Corp. purchased Block 5020, Lot 6 from Union Carbide (PAS-00129641).

1965: Alliance became a wholly owned subsidiary of Pfister Chemical, Inc. (Pfister), In 1965 Pfister acquired the stock of Alliance, Alliance Color & Chemical Co. and Plum Point Realty Corp., which owned and operated the facility site located at 309-327 Avenue P (33 Avenue P) (PAS-00000080-81). In 1965, Alliance Color and Chemical purchased the site from Sun Chemical Company (PAP-00066461; PAS-00049990).

1968: Alliance Chemical Co. and Plum Point Realty were merged into Alliance Color and Chemical, Co., and the name was changed to Alliance Chemical, Inc. (PAS-00000093).

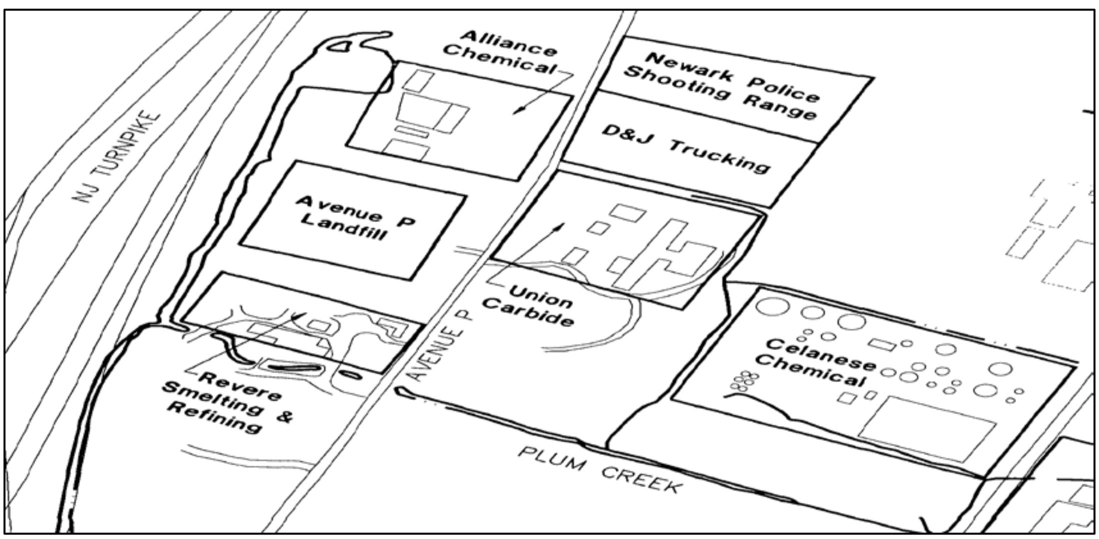
1974: D&J Trucking purchased Block 5020, Lot 6 of the facility from Sun Chemical Corp. and conveyed it to the Housing Authority in 1978 (PAS-00129641).

1990: According to a January 24, 1990, *General Information and Site History* document, lot ownership was as follows: Lot 3 owned by Pfister Chemical Inc.; Lots 6 and 136 owned by Pfister Urban Renewal; Lot 8 owned by Plum Point Realty Corporation; and Lot 12 owned by Alliance Chemical and Color, Inc. (PAP-00066461).

2001: Pfister notified NJDEP that Alliance Chemical, Inc. closed. The site was undergoing remedial investigation, and site security was maintained (PAP-00065965).

2003: According to the June 2018 *Remedial Action Report / Remedial Action Work Plan* by Matrix, in Fall 2003, the majority of buildings and structures at the site were demolished, and tanks, drainage trenches, the neutralization pit, pipes and other operating facilities were cleaned and removed from service. Tanks and processing equipment were removed from the site for off-site disposal or recycling. The former shipping and receiving building and the former warehouse were left at the site for future use. The site was then leveled, covered with geotextile fabric and covered with approximately 6-8 inches of crushed rock and asphalt millings (PAP-00216677).

2006: Alliance sold the site to Apollo Development Corp on March 23, 2006 (PAP-00216720).



(PAS-00123111)

3. Operational History/COC Use and Presence at the Facility

In Alliance Chemical, Inc.'s Response to Request for Information, Alliance stated it manufactured organic intermediates that included:

5-chloro-2,4-dimethoxyaniline between 1976 and 1987
2-chloro-1,4-dimethoxy-5-nitrobenzene between 1965 and 1985 (PAS-00050023).

According to the 1990 *Avenue P Landfill Investigative Summary* (the Avenue P Landfill is adjacent to the south side of Alliance), production of these two products (dioxin precursors) involved mixing muratic acid, water and organic chemical reagents in a large vessel. The intermediate was filtered and washed. The process generates two wash streams: 1) filter cake (containing copper, lead and mercury) and 2) acid process water. The cake was stored in drums and a sludge box at the rear of the facility, adjacent to the landfill. Approximately 200 drums were observed, inspected (PAS-00129646) and hauled off as needed (PAP-00065690). Process water was discharged to a trench that led to an unlined neutralization pit. PCBs were detected in sludge samples obtained from the trench. PCBs, lead, and mercury were found in soil, sediment and surface water obtained from the site (PAS-000129646).

In Alliance's response to an EPA Second Request for Information, it was reported that between 1965 and 1970, acidic effluent water, neutralized in tanks, was discharged to an equalization pond, and non-acidic effluent was discharged directly to the equalization pond. After 1970, process water discharged to the equalization pond and then was neutralized with 25% caustic soda or dilute ammonia. The equalization pond closed after 1979 (PAS-00049633).

As stated in Alliance's Response to Request for Information, other dyes, pigments, and diazo compounds manufactured at the site included:

- 2-methoxy-5-nitro benzenamine between 1965 and 1980. This compound was manufactured at Alliance in the same manner as 5-chloro-2,4-dimethoxyhaniline, except the starting material was 2,4-dinitro chlorobenzene (PAS-00050025).

- 3,3'-dimethoxy benzidine between 1965 and 1970. Manufacturing started with o-nitro anisole, and via an alkaline zinc reduction a hydrazo compound resulted followed by a benzidine rearrangement which then created the desired compound (PAS-00050025).

- 3,3'-dimethyl benzidine between 1965 and 1970. This intermediate started with o-nitro toluene that underwent an alkaline zinc reduction resulting in a hydrazo compound. The new compound underwent a benzidine rearrangement that produced the desired compound (PAS-00050025).

- 2,5-diethoxy-4-(4-morpholinyl)-benzenediazonium tetrachlorozincate (2-)(2:1) between 1965 and 1970. Alliance manufactured light-sensitive diazo compounds that were stabilized by a zinc salt. 2-chloro-1,4-diethoxy-5-nitro benzene was condensed with morpholine to produce 2,5-diethoxy-4-morpholino nitro benzene. This compound reduced in hydrochloric acid to an amine with zinc dust. The amine was then diazotized with sodium nitrite and the zinc stabilized diazo compound precipitated. A dibutoxy compound was produced the same way (PAS-00050025-6). Zinc carbonate and zinc hydroxide were produced in the recovery processes as a precipitate from the effluent at an alkaline pH with caustic soda or soda ash (PAS-00050026).

All products, except for zinc carbonate, zinc hydroxide and 2-chloro-1,4-diethoxy-5-nitro benzene were purified by dissolving the product in acid and treating the solution with activated carbon to remove color and then re-preciptating the product. The process resulted in carbon clarification press cakes that contained small amounts of carbon. The press cakes were disposed as a solid waste. The two benzidine processes produced a zinc oxide slurry that was recovered and sent for recycling (PAS-00050026).

The average annual production is provide below (PAS-00050031).

2-Chloro-1,4-diethoxy-5-nitro benzene	(product) '65-'85	130,000	lbs/yr
5-Chloro-2,4-dimethoxyaniline	(product) '76-'87	15,000	lbs/yr
2-Methoxy-5-nitro benzenamine	(product) '65-'85	80,000	lbs/yr
3,3'-Dimethoxy benzidine	(product) '65-'70	200,000	lbs/yr
3,3'-Dimethyl benzidine	(product) '65-'70	20,000	lbs/yr
Zinc Compounds (light-sensitiv diazos)	(product) '65-'90	105,000	lbs/yr
Zinc Compounds (Fast Color Salts)	(product) '65-'87	160,000	lbs/yr
Zinc Carbonate-zinc hydroxide	1992-on	25	tons/year
Zinc oxide slurry	1965-1971	120	tons/year
Non-hazardous press cakes	1965-on	50	tons/year
Hazardous press cakes	1989-1991	125	tons/year
Waste oil		5-10	drums/year

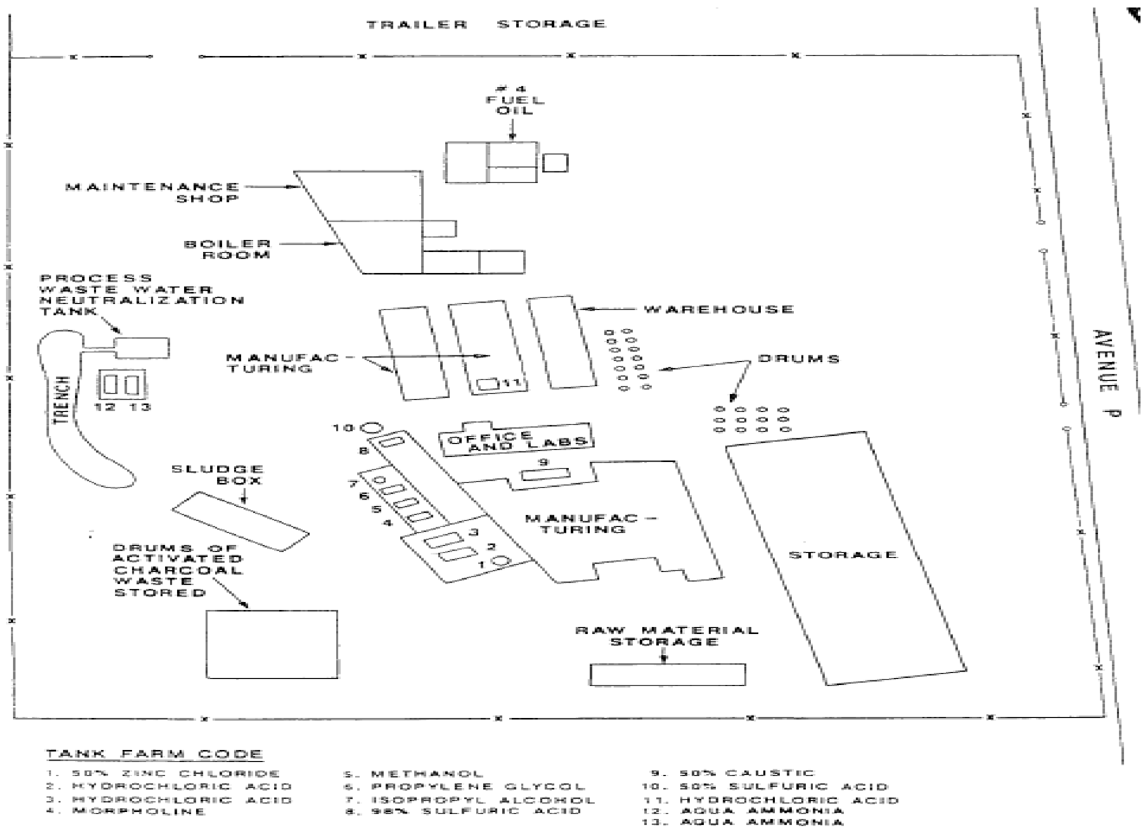
According to a 1990 *Avenue P Landfill Investigative Summary*, 1972 aerial photographs identified an extensive drum storage area on the southwestern side of the Alliance plant (PAS-00129646), and a Preliminary Assessment aerial photograph survey described an outside drum storage area in the south-central portion of the site (PAP-00065691).

The 1990 *Avenue P Landfill Investigative Summary* noted that a 1974 aerial photograph identified a road entering the northwestern portion of the Avenue P Landfill from Alliance, and the number of drums on the Alliance premises was significantly reduced. Most of the drums were discovered in the northwest portion of the landfill (PAS-00129646-47).

According to a January 24, 1990, *General Information and Site History* document, Alliance had 16 bulk aboveground storage tanks. The tanks and contents are summarized below. Reportedly, Alliance officials, in their contingency plan, maintained that there was a sufficient dike at each tank to contain a spill (PAS-00049992).

Three 3,000 gallon #4 fuel oil tanks,
One 10,000 gallon #4 fuel oil tank,
One 4,000 gallon 98% sulfuric acid tank,
One 3,000 gallon 50% sulfuric acid tank,
One 15,000 gallon 38% hydrochloric acid tank,
One 3,000 gallon 38% hydrochloric acid tank,
One 10,000 gallon 38% hydrochloric acid tank,
One 4,800 gallon 50% zinc chloride solution tank,
One 7,600 gallon 50% caustic (sodium hydroxide solution) tank,
Two 9,000 gallon 20% aqua ammonia tanks,
One 5,600 gallon methanol tank,
One 4,000 gallon isopropyl alcohol tank,
One 5,600 gallon morpholine tank.

The site layout is depicted below.



(PAS-00109491)

4. Identified COC's

- PCBs (detected)
- Dioxin (not detected)
- PAHs (detected)
- Dieldrin/Aldrin (detected)
- Cooper (used, detected)
- Lead (used, detected)
- Mercury (detected)

PCBs

According to a January 24, 1990, *General Information and Site History* document, soil sampling conducted by NJDEP on November 25, 1980, and collected in the area of a lagoon resulted in PCB (Aroclor 1254) concentrations of 2,300 parts per billion (ppb) and 2,700 ppb (PAS-00049994).

According to the *1990 Avenue P Landfill Investigative Summary*, drums removed from the adjacent Avenue P landfill site contained PCBs (PAS-00076994). Available references state that the drums were from the Alliance site. In addition, facility process water discharged into a trench that led to an unlined neutralization pit. Sludge samples collected from the trench in 1981 contained PCBs (PAS-00129646). Note: concentrations were not provided in the report.

A 1989 data report from AnalytiKEM prepared for NJDEP reported soil samples collected on October 19, 1989, at the Alliance facility contained PCBs at concentrations between 4,900 and 16,000 (Aroclor-1248) in samples S-1 and S-9, respectively, and 4,900 (Aroclor-1254) in sample S-7 (the concentration units were not reported) (PAS-0049941). Sample S-1 was collected from the northwest corner of the facility near the border and S-9 was collected from the south central portion of the site as referenced in the map at the end of this section.

According to Exhibit B-2, a summary table of contaminant concentrations from previous investigations, from the October 24, 2019, Deed Notice, Aroclors were detected in the following subsurface soil samples:

PCB Detections			
Compound	**Concentration (µg/kg)**	**Sample**	**Depth (ft bgs)**
Aroclor-1242	80,000	A-12	3-3.5
	14,000	A-14	2-2.5
Aroclor-1248	850	ACAS-2A	6-7.5
	970	A-10	8-8.5
	1,500	A-15	2.5-3
Aroclor-1254	2,200	ACAS_9	5-6
	2,600	A-10	8-8.5
	850	A-10B	14.5-15
	73,000	A-12	3-3.5
	630	A-15	2.5-3

Dates on which the samples were collected were not included in the table, but the deed notice states that soils were remediated by Pfister, and that the remaining contamination was described by the data in Exhibit B (PAP-00487839, 53-8).[1]

Per the Appendix A of a November 18, 2002 Preliminary Assessment, there were no electrical transformers or capacitors at the Alliance site (PAP-00065692).

Dioxin / Furans

According to January 24, 1990, *General Information and Site History* document of Alliance, on August 3, 1983 an inspection of Alliance by the Industrial Investigation Unit of NJDEP raised the question of dioxin contamination at the site from the manufacture of Class II dioxin precursor chemicals 2-chloro-1,4-diethoxy-5-nitrobenzene (1975–1980) and 5-chloro-2,4-dimethoxyaniline (1965–1983). Sampling conducted on May 10, 1985 revealed “no traces” of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) (PAS-00049991; PAS-00129646).

[1] This Report was revised to include documents received on March 19, 2020. The additional documents did not change Alliance Chemical’s previous certification.

PAHs

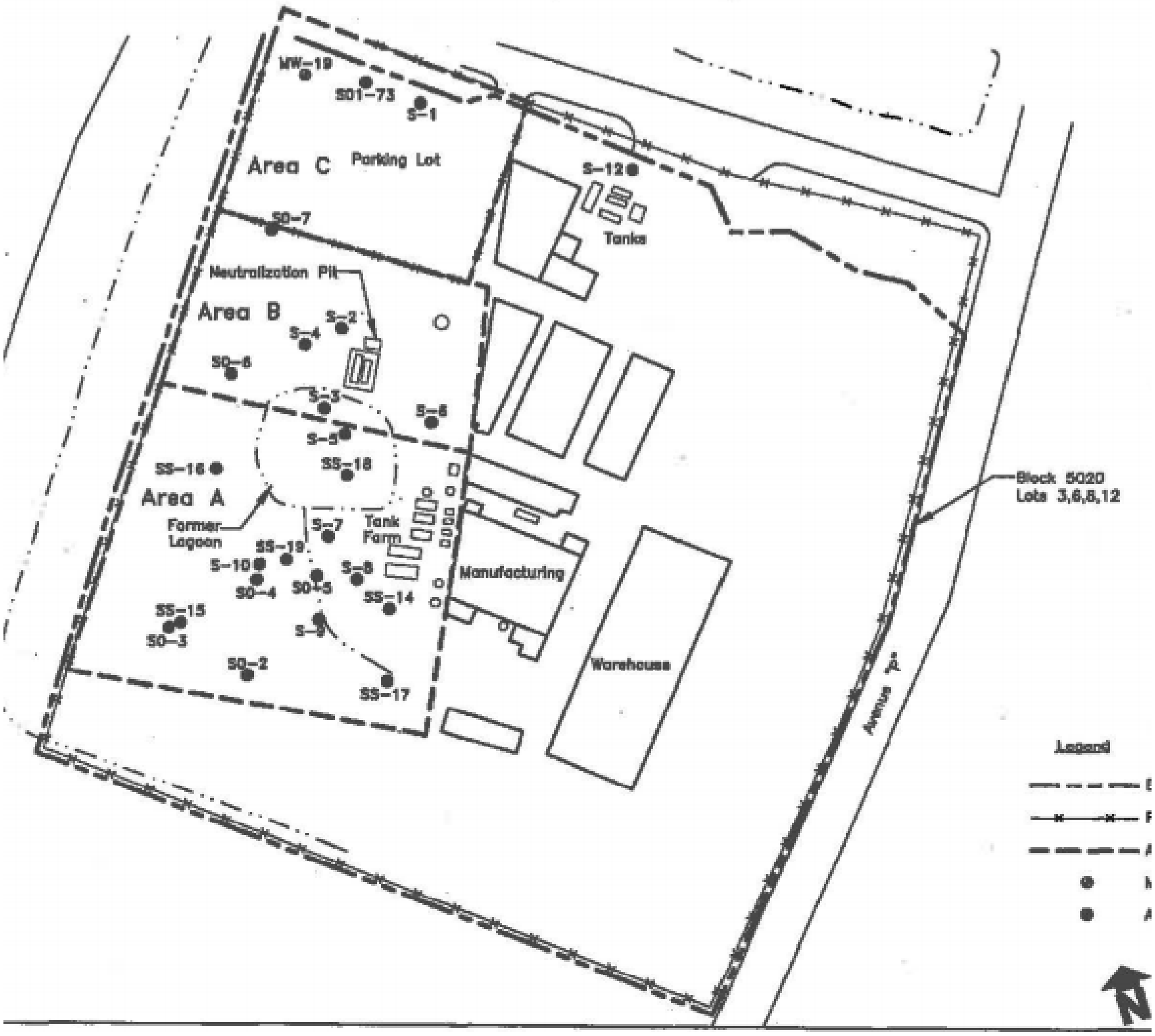
Soil sample concentrations of PAHs presented in the *Summary of Sampling Data*, dated October 19, 1989 are provided below (PAS-00049935-38; PAS-00109553-63).

PAH Concentrations (mg/kg)		
Contaminant	**Minimum**	**Maximum**
Benzo(a)anthracene	1,400	1,000,000
Benzo(b)fluoranthene	2,300	4,400
Benzo(a)pyrene	980	2,700
Benzo(g,h,i)perylene	690	2,800
Chrysene	1,500	31,000
Dibenzo(a,h)anthracene	110	660
Fluorene	240	630
Fluoranthene	4,500	28,000
Indeno(1,2,3-cd)pyrene	790	4,000
Naphthalene	1,300	25,000
Pyrene	2,400	4,800
2-Methylnaphthalene	1,000	2,000

Sampling results contained in the December 2000 *Remedial Investigation Work Plan* showed sample S-5 contained 3,500 ug/kg benzo(a)anthracene; 3,700 ug/kg benzo(a)pyrene; 2,800 ug/kg benzo(g,h,i)perylene and 4,400 ug/kg benzo(k)fluoranthene at 2.5 feet bgs (PAP-00065653-54). Sample S-5 originated in the central western portion of the facility in Area B. The only structure within Area B was the neutralization pit from the wastewater discharge system. The location of the wastewater lagoon is partially within Area A and Area B (PAP-00065655).

According to an ERM letter, dated December 28, 1998, benzo(a)pyrene was associated with older asphalt paving areas, and they claimed it was never used in Alliance manufacturing (PAP-00065909-10).

Figure 2
Historical Soil Sample Location Map
Alliance Chemical, Inc.
Newark, New Jersey



(PAP-00065652)

According to the June 2018 *Remedial Action Report / Remedial Action Work Plan* by Matrix, in order to support the planning and implementation of the initial investigation activities at the site, the site was previously divided into four separate areas, referred to as Areas A, B, C, and the Plant Area. Area B is located in the central-western portion of the facility and was an open area, formerly covered with vegetation. The western edge of Area B borders the New Jersey Turnpike. The northern boundary of Area B is adjacent to Area C, which was an asphalt parking lot, while the eastern boundary of Area B borders the former Alliance Plant area. The southern perimeter of Area B adjoins Area A. The only structure in Area B was the neutralization pit from the wastewater discharge system. These areas have since been grouped back together and the site is currently considered as a whole for the purposes of remediation (PAP-00216680).

According to Exhibit B-2, a summary table of contaminant concentrations from previous investigations, from the October 24, 2019, Deed Notice, PAHs were detected in subsurface soil samples in the following ranges:

PAH Concentrations (µg/kg)			
Contaminant	**Minimum**	**Maximum**	**Sample Location/ Depth of Max**
Benzo(a)anthracene	1,200	1,100,000	A-14 / 2-2.5 ft bgs
Benzo(b)fluoranthene	940	54,000	A-14 / 2-2.5 ft bgs
Benzo(k)fluoranthene	1,400	19,000	A-14 / 2-2.5 ft bgs
Benzo(a)pyrene	670	4,200	A-2 / 3.75-4.25 ft bgs
Indeno(1,2,3-cd)pyrene	1,100	1,600	ACBS-3A / 5-5.75 ft bgs
Naphthalene	360,000	730,000	A-14 / 2-2.5 ft bgs

Dates on which the samples were collected were not included in the table, but the deed notice states that soils were remediated by Pfister, and that the remaining contamination was described by the data in Exhibit B (PAP-00487839, 53-8).[2]

Dieldrin / Aldrin

Exhibit B-2 from the October 24, 2019, Deed Notice, a summary table of contaminant concentrations, has one detection of 1,800 µg/kg Aldrin in sample ACAS-3A at a depth of 3.5-4’, located near the southwest corner of the property. Dates on which the samples were collected were not included in the table, but the deed notice states that soils were remediated by Pfister, and that the remaining contamination was described by the data in Exhibit B (PAP-00487839, 54).[2]

Metals – Cooper, Lead and Mercury

According to a 1970 *Selected Substance Report*, copper was used as a raw material complexing agent in the production of specialty organic chemicals. Alliance brought 1,600 pounds per year onto the site and discharged 100 pounds per year to the local publicly owned treatment works (POTW) (PAS-00049906).

According to a January 24, 1990, *General Information and Site History* document, the filter cake manufactured in the wash stream was found to contain copper, lead and mercury (PAP-00066462). The cake was stored in drums and a sludge box at the rear of the facility. The *Avenue P Landfill Investigative Summary* noted that approximately 200 drums were located in the rear storage facility (PAS-000129646).

Alliance Chemical effluent sampled on December 12, 1979, identified 17.31 milligrams per liter (mg/L) copper, 1.043 mg/L lead and 0.005 mg/L mercury (PAS-00049636). According to sampling results in a 2000 *Remedial Investigation Work Plan* prepared by Environmental Resources Management (ERM), copper concentrations ranged between 86.8 mg/kg in soil sample S07B/77E collected in September 1988 at 3-3.5 feet below

[2] This Report was revised to include documents received on March 19, 2020. The additional documents did not change Alliance Chemical’s previous certification.

ground surface (bgs) and 456 mg/kg in soil sample S06B/77E at 3-3.5 feet bgs collected in September 1988. Lead ranged between 320 mg/kg in S07B/77E collected between 3-3.5 feet bgs and 84,200 mg/kg in soil sample S07/A77E. Mercury concentrations ranged between 0.4 mg/kg in soil sample S06A77E at 0-0.5 feet bgs collected in September 1988 and 5.3 mg/kg in sample S07B77E at 3-3.5 feet bgs (PAP-00065653). All samples originated from the west central area of the facility as referenced in the map at the end of this section.

According to Exhibit B-2, a summary table of contaminant concentrations from previous investigations, from the October 24, 2019, Deed Notice, metals were detected in subsurface soil samples in the following ranges:

Metals Concentrations (mg/kg)			
Consitituent	**Minimum**	**Maximum**	**Sample Location/Depth of Max**
Copper	1,100	2,200	SB-208 / 2.5-3 ft bgs
Lead	534	3,600	ACLS-1 / 6-6.5 ft bgs
Mercury	33.9	106	A-14 / 2-2.5 ft bgs

Dates on which the samples were collected were not included in the table, but the deed notice states that soils were remediated by Pfister, and that the remaining contamination was described by the data in Exhibit B (PAP-00487839, 53-8).[3]

Historic Fill

The Allocation Team has determined that the facility site is partially located on regional Historic Fill as designated by the NJDEP.[4]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[5] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[6] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[7]

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[3] This Report was revised to include documents received on March 19, 2020. The additional documents did not change Alliance Chemical's previous certification.
[4] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).
[5] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[6] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[7] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that

The levels of PAHs, lead, copper and mercury detected at the site in soils are presented in the table below (PAP-00066475; PAP-00065653; PAP-00065653-54; PAP-00487855-8).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	84,200 mg/kg
Copper	2,200 mg/kg
Mercury	106 mg/kg
Benzo(a)anthracene	1,100 mg/kg
Benzo(a)pyrene	4.2 mg/kg
Benzo(b)fluoranthene	54 mg/kg
Benzo(k)fluoranthene	19 mg/kg
Dibenzo(a,h)anthracene	0.66 mg/kg
Indeno(1,2,3-cd)pyrene	6.0 mg/kg

There is insufficient information in available references to determine whether referenced soil samples were taken in an area of the site that contained Historic Fill.

According to a letter dated July 12, 1993, NJDEP approved Alliance's reuse of excavated on-site soils, provided there was no other regulation prohibiting its use. The soil was excavated from an area near the sewer line and placed near an on-site tank and vat (PAP-00065884).

According to a January 24, 1990, *General Information and Site History* document, a Pre-sampling Assessment by NJDEP on October 3, 1989, revealed the soil contained numerous pieces of building material, such as bricks. It was believed that some of this fill came from the building, which was destroyed in a January 1980 explosion and fire (PAS-00049994). According to the June 2018 *Remedial Action Report / Remedial Action Work Plan* by Matrix, soil boring logs identified historic fill on the site to contain dark brown, silty sand with trace gravel, brick and concrete to an approximated depth of 13 feet bgs (PAP-00216679).

According to a December 23, 1998, letter to NJDEP from ERM, lead concentrations in surface soil samples are likely associated with historic fill placed in the early 19th century in Northern New Jersey along Avenue P, and that lead was never used as a manufacturing component (PAP-00065910). A 2005 Classification Exception Area (CEA) Information document noted that historic fill was present in the upper 8 to 11 feet of materials below the ground surface, and historic fill coincides with site boundaries (PAP-00066065-67). The 2000 Remedial Investigation Work Plan states that the site was underlain by approximately 6 to 7 feet of historic fill (PAP-00065655).

the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

According to a June 2005 *Classification Exception Area Information Document for the Former Alliance Chemical, Inc. Site*, the entire site was included in a CEA with a well restriction area (PAP-00066062). The groundwater at the site is contaminated with several constituents resulting from historic fill, migration onto the site from off-site areas and historic on-site activities with elevated concentrations of metals and PAHs that are common to historic fill materials. Many of these constituents were detected in excess of the NJDEP Ground Water Quality Standards (GWQS) across the entire sire or portions of the site (PAP-00066063-64). The CEA would encompass the entire site, along with minor areas off-site migration to the north and west (PAP-00066066).

A Deed Notice dated October 24, 2019 specified restricted land uses and the placement of engineering controls in the form of a geotextile fabric and aggregate cap and existing building slab (PAP-00403645-79, PAP-00487383-72).[8]

5. COC Pathways

Direct Discharge

A January 24, 1990, *General Information and Site History* document, reported the nearest downslope surface water is the Passaic River, approximately 0.5 miles from Alliance. There is also a tidal basin located at the rear of Alliance that flows in an easterly direction. Reportedly, an aerial map identified a trench running from Alliance to the tidal basin. The trench ran from the processing area parallel to another trench. One trench ran into the lagoon while the other ran into the tidal basin. The basin is located on property belonging to the New Jersey Turnpike Authority and is less than 100 feet from Alliance property (PAS-00049993). According to a January 24, 1990, *General Information and Site History* document, Alliance's past practice of discharging into the tidal basin at the rear of their property may have led to off-site contamination (PAS-00049995).

A 1997 *Supplemental Investigative Activities Report and Proposed Soil Sampling Plan* described a drainage channel for surface water runoff located along the western border running north and south (PAP-00066491). The Appendix A of a November 18, 2002 Preliminary Assessment confirmed a drainage ditch historically located beyond the western boundary of the site, along the embankment for the turnpike (PAP-00065692).

Plum Creek

According to a *Plum Creek PRP Investigation* dated December 18, 2001, Plum Creek is approximately 0.5 miles in length, has several connecting branches, and discharges to the Passaic River immediately south of its confluence with Newark Bay (PAS-00123102).

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[8] This Report was revised to include documents received on March 19, 2020. The additional documents did not change Alliance Chemical's previous certification.

As early as 1948, Passaic Valley Sewerage Commissioners (PVSC) reported that the Alliance site location was discharging a yellow-colored discharge via storm ditch to Plum Creek (PAS-00049842, 814, 820). As a result of flooding and discharges to the creek, Alliance was connected to the sewer system in 1970; however, the on-site lagoon reportedly continued to part of the discharge system until 1979. Sludge samples collected in 1980 from the lagoon identified PCBs (PAS-00123103, 114). Lead was found in Plum Creek West at 1,550 mg/kg and on-site at 1,430 mg/kg. Mercury was found at Plum Creek West at 1.56 mg/kg and on-site at 96.3 mg/kg. Copper was found in Plum Creek West at 296 mg/kg and on-site at 1,050 mg/kg. Aroclor 1254 was found on-site at 2.7 mg/kg and in the Plum Creek West sample at 5.8 mg/kg (PAS-00123103-04,113-14; PAS-00109554-55). Note specific sampling locations were not provided in the report but are reportedly on file with the NJDEP, Division of Waste Management (PAS-00109551-52).

In 1966, the U.S. Army Corps of Engineers (Corps) sent a letter to Alliance Color & Chemical Company informing them that on several occasions commencing on June 26, 1965, and subsequent to that date, a discoloration has been observed in the tidal waters of Newark Bay. Investigation disclosed that at least a portion of the pollutant originated the Alliance site. Samples collected in June 1965 were analyzed by the U.S. Customs Laboratory. Sampling results showed compatible content with material found in tidal waters off Newark Bay with those stored and discharged from Alliance (PAS-00049849-50). A 1966 interoffice memo stated, “everything (except strong acid from Building 7) goes to the brook” (PAS-00049852). The Corps returned and found Alliance’s effluent pipe discharging a red acidic waste traced to “press drippage on PDC chlorsulfination filtration” from Buildings 4 and 7 into the brook (PAS-00049864).

According to an Alliance Plant – Sewerage Discharge Letter dated February 7, 1969, the wastewater discharge flow rate to Plum Creek ranged between 70 gallons per minute (gpm) and 112 gpm and the pH was alkaline for long periods and acidic for long periods. (PAS-00049878). Flow rate survey data collected at Plum Creek is provided below.

SURVEY DATA FROM CREEK

Date	Time	GPM	pH
1-23	3 PM	29	9.9
1-23	4 PM	29	11.3
1-23	8 PM	29	2.6
1-23	12 PM	80	7.7
1-24	4 AM	80	9.8
1-24	9 AM	71	7.7
1-24	1 PM	100	
1-24	4 PM	71	11.6
1-24	8 PM	90	8.0
1-24	12 PM	71	12.0
1-25	4 AM	112	5.6
1-25	8 AM	71	4.0

Date	Time	GPM	pH
1-27	8 AM	20	6.0
1-27	12 AM	71	9.5
1-27	4 PM	71	1.0
1-27	8 PM	124	1.0
1-27	12 PM	100	1.0
1-28	4 AM	90	3.0
1-28	8 AM	80	3.0
1-28	9 AM	112	5.0
1-28	12 AM	100	1.0
1-28	4 PM	100	1.5
1-28	5 PM	41	8.0
1-28	8 PM	112	8.0
1-28	12 PM	136	8.0

Date	Time	GPM	pH
1-29	4 AM	80	1.0
1-29	8 AM	71	11.0
1-29	12 AM	71	5.5
1-29	4 PM	112	5.5
1-29	8 PM	150	
1-29	12 PM	164	5.5
1-30	4 AM	112	1.0
1-30	8 AM	100	1.0
1-30	1 PM	71	1.0
1-30	4 PM	71	9.0
1-31	8 AM	112	2.0
1-31	4 PM	112	5.0
1-31	8 PM	212	5.0
1-31	12 PM	112	5.0

According to a PVSC letter regarding Plum Creek dated December 18, 1969, a sample taken from the plant discharge to Plum Creek on December 10, 1969, was found to be flammable and had an explosimeter reading of 80%. PVSC reported that this discharge would not be allowed when Alliance completed their connection to PVSC (PAS-00049887).

According to a 1993 *Passaic River Study Area* report, in 1981 cleanup of a drainage ditch on Avenue P Landfill property resulted in several barrels in the ditch being hit with an excavation shovel. Runoff from the drums entered Plum Creek (PAS-00076955).

Per a 2001 *Plum Creek PRP Investigation*, Plum Creek borders Alliance and the site's effluent discharged to Plum Creek until 1970 through an unlined lagoon and trench (PAS-00123102-03). The Appendix A of a November 18, 2002, *Preliminary Assessment* for Alliance noted that the former wastewater lagoon was found to serve as a former discharge point, and sludge residuals were believed to be buried within the extent of the lagoon (PAP-00065692).

Flooding

Alliance is located on a 100 year flood plain (PAS-00049993). In 1967, Pfister Chemical Works sent a memo to George Shulman regarding drainage problems caused by heavy rains. The memo reported that the twelve-inch diameter drain line was backing up into plant buildings to a level of 12-18 inches during heavy rains. Of note was that flooding from Sun Chemical east of the property raised the water table, and water percolated up through holes in the asphalt concrete immediately north of the warehouse to as much as four inches above the top of the concrete (PAS-00049909-10).

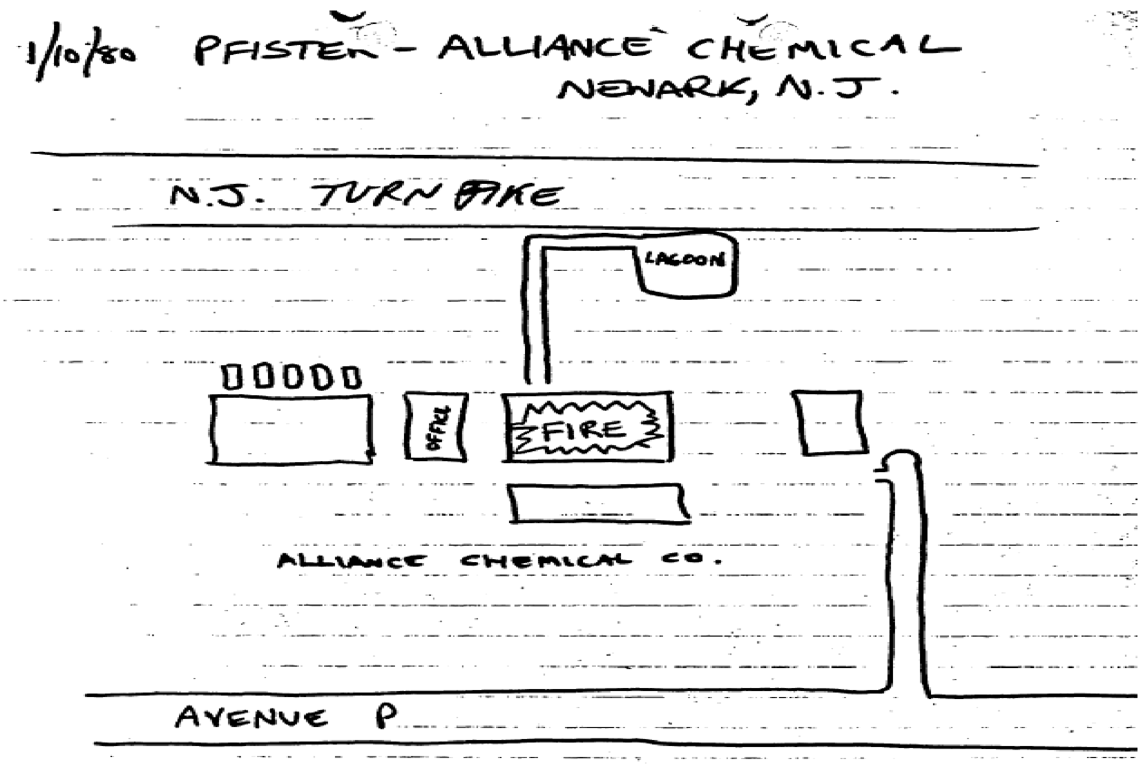
In 1972 Alliance sent a letter to the Mayor of Newark informing him that in 1971 Alliance was shut down three times due to flooding from Plum Creek (PAS-00050252). In March 1972, the Alliance Plant Manager communicated with the Director of Public Works about obstructions in Plum Creek that created flooding conditions (PAS-00050255).

In July 1975, Alliance wrote a letter to the City of Newark Department of Sewers notifying them that they were shut down under two feet of water, due to flooding from Plum Creek. Again in September 1975, Alliance wrote a letter to the Department of Sewers telling them operations were shut down due to their being inundated by 8 inches of water from Plum Creek (PAS-00050252).

Combined Sanitary and Storm Sewer

Appendix A of a November 18, 2002 *Preliminary Assessment* stated that between the early 1950s and late 1970s, industrial discharge flowed into on-site lagoons. A lagoon, originally located in the northern portion of the property, discharged to the public sewer system after the solids were settled in the lagoon and liquid passed through the neutralization pit in the north central portion of the site. The lagoon was backfilled prior to 1986 (PAP-00065690-91).

The January 24, 1990, *General Information and Site History* document reported Alliance Chemical used open unlined trenches to run liquid wastes to an unlined lagoon. Reportedly, aerial photographs identify a trench in 1961 that remains visible until 1972. In 1974, a lagoon appears in aerial photographs, and in 1978, the lagoon appears to contain water and the trench appears to be running into both the lagoon and a tidal basin. Aerial photographs also helped determine that the lagoon was backfilled without notifying NJDEP (PAP-00066461). Note: copies of aerial photographs were not submitted in the available references.

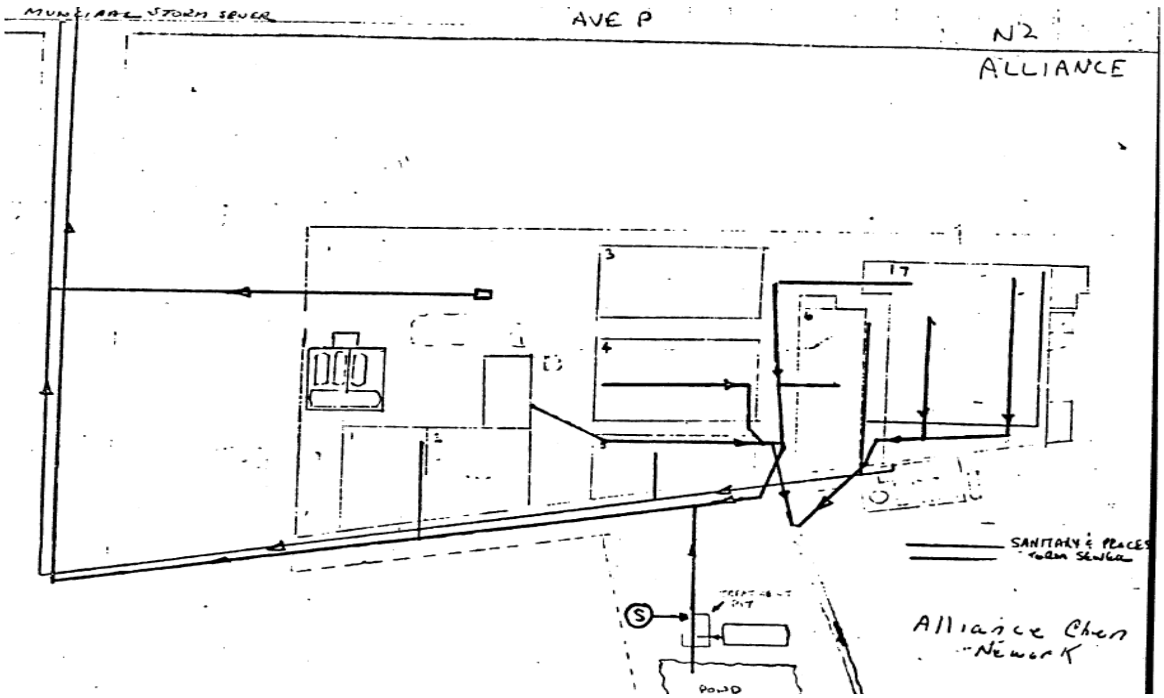


(PAS-00049999)

According to a 1997 letter to EPA, in 1970, Alliance Chemical connected into the Roanoke Avenue Combined Sewer Outfall (CSO). In a 1978 *Newark Feasibility Study "Pollution Abatement Program" Report*, it was reported that the Avenue P regulator and Roanoke Outfall Sewer had malfunctioned between 1978 and into the 1980s; therefore, both wet and dry weather discharges occurred (PAS-00053972-73). Approximately 0.5 feet of granular sediment containing organic contaminants was found in the combined sewer above the regulator that flushed during relatively small rainfall events. In addition, water from the Passaic River may enter the sewer with incoming tides and dilute pollutant concentrations (PAS-00049794, 96).

The discharge mechanism was found to be a catch basin that led to a storm drain that in turn led to the Roanoke Avenue CSO, and then to the Passaic River through the Avenue P Regulator (PAS-00053973). The Appendix A of a November 18, 2002 Preliminary Assessment reported underground piping associated with floor drains, sumps and the

on-site stormwater collection system connected the sewer line with a neutralization pit that was in the north-central portion of the site (PAP-00065691-92). Below is an image of the Combined Sanitary and Storm Sewer Outfall Connection (PAS-00072901).



According to a 1970 *Selected Substance Report*, Alliance discharged on average 100,000 gallons of wastewater per day to the POTW serviced by PVSC, and utilized neutralization in their pretreatment methods. The wastewater consisted of process water, contaminated stormwater, washdown water and scrubber water (PAS-00049903).

According to a 1972 Waste Effluent Survey, 29,228,900 gallons of water was purchased in 1971, of which 29,200,000 gallons went to the sanitary sewer, which is tied into the Avenue P Sewer System, with an average discharge rate of about 100 gpm (PAS-00049895-96).

According to a PVSC Sewer Connection Application, industrial waste samples collected in 1979 identified 17.31 mg/L copper, 1.043 mg/L lead and 0.005 mg/L mercury. Daily flow was reportedly 105,000 gallons through a 15-inch sewer connection (PAS-00072898-900). In 1979, the facility sewer system was tied into the Avenue P sewer system with a continuous discharge of 24 hours per day at an average rate of about 100 gpm (PAS-00049641-42). Samples collected on August 20, 1985, and analyzed by Garden State Laboratories, Inc. contained 1.32 mg/L lead, 0.68 mg/L copper and 0.003 mg/L mercury (PAP-00066325). PVSC samples collected on September 12, 1989, contained 1.09 mg/L lead (PAP-000663557) and PVSC samples collected on March 7, 1990 contained 0.7500 mg/L lead (PAP-00066353).

Pretreatment Monitoring Reports from 1991, 1994 and 1995 showed lead discharges were within permitted limits (listed in 0.18153 average pounds) (PAS-00049754, PAS-00049705, and PAS-00049649). PAH sampling results for September 1991 and October 1995 were non-detect (PAS-00049760, PAS-00049664-65).

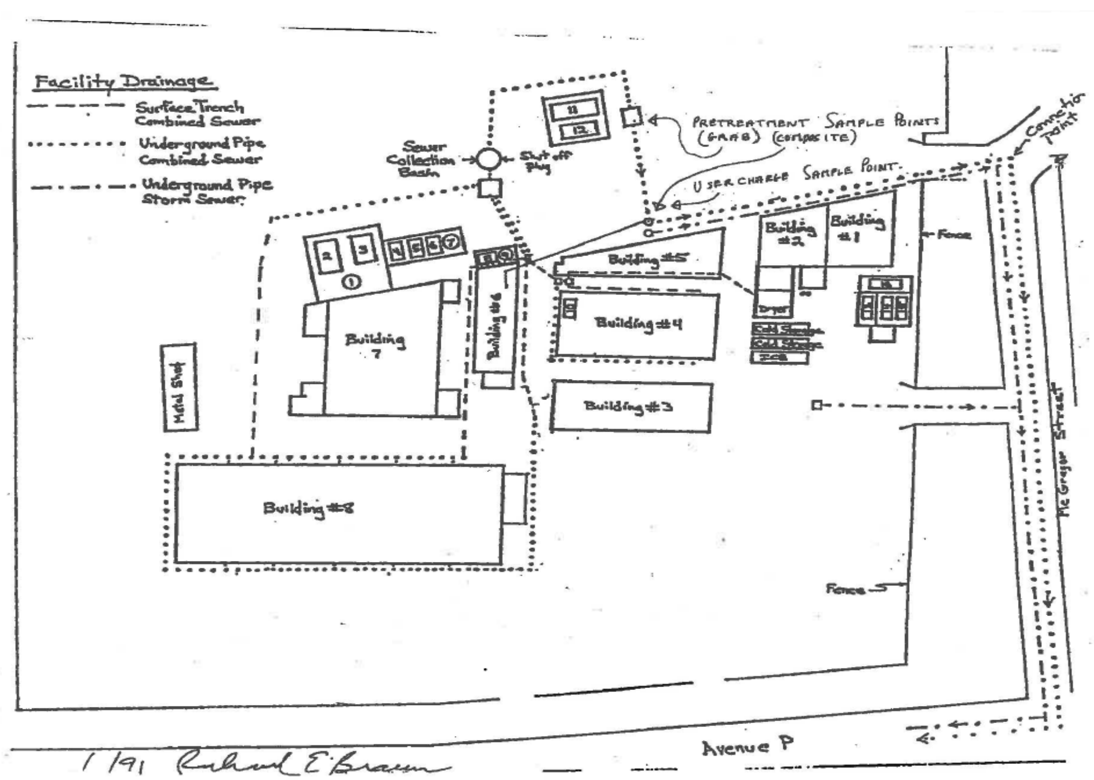
In a Sewer Connection Permit No. 20401080 renewal, industrial waste was reported to contain 0.31 mg/L copper; 1.07 mg/L lead and 0.002 mg/L mercury (PAP-00066374).

PVSC received a letter from Alliance, dated April 28, 1993, that identified an average discharge flow of 24,752,000 gallons through a single point to PVSC with a high of 33,685,000 gallons to a low of 17,100,000 gallons from 1971 to 1980. The average flow between 1981 and 1990 was 16,261,000 gallons with a high of 19,600,000 and low of 13,828,000 (PAP-00066450).

Alliance's Waste Effluent Survey and PVSC applications document the following water usage and daily flow (PAS-00049895-96; PAS-00072896).

Alliance Water Discharge and Usage (in gallons)		
Reporting Year	**Sanitary Discharge**	**Total Water Use**
1971	29,200,000	29,228,900
1979	26,696,250	26,696,250

Below is an image of Alliance's Facility Drainage (PAS-00066422).



Spills

According to a January 24, 1990, *General Information and Site History* document, a Pre Sampling Assessment by NJDEP on October 3, 1989, revealed numerous areas of soil staining throughout the site. During the inspection, puddles were observed with a sheen at several locations. Further, concrete areas around the wastewater trenches were stained with multi-colored substances (PAS-00049994).

6. Regulatory History/Enforcement Actions

Inspections

According to a letter from Corps of Engineers, Supervisor of New York Harbor, illegal discharge of acid into Newark Bay was in violation of Federal Statutes (U.S.C Title 33, Section 407) and on several occasions during the month of February 1966, inspections revealed that acid was still being deposited into the bay and although Alliance was attempting to correct the situation their actions had not completely negated the pollution (PAS-00049870).

According to an January 24, 1990, *General Information and Site History* document of Alliance, on August 3, 1983, an inspection of Alliance by the Industrial Investigation Unit of NJDEP raised the question of dioxin contamination at the site from the manufacture of Class II dioxin precursor chemicals 2-chloro-1,4-diethoxy-5-nitrobenzene (1975–1980) and 5-chloro-2,4-dimethoxyaniline (1965–1983). Sampling conducted on May 10, 1985, revealed no traces of 2,3,7,8-TCDD (PAS-00049991; PAS-00129646).

According to a January 24, 1990, *General Information and Site History* document, a Pre Sampling Assessment by NJDEP on October 3, 1989, revealed numerous areas of soil staining throughout the site. During the inspection, puddles were observed with a sheen at several locations. Further, concrete areas around the wastewater trenches were stained with multi-colored substances (PAS-00049994).

Violations

According to a letter from Corps of Engineers, Supervisor of New York Harbor, illegal discharge of acid into Newark Bay was in violation of Federal Statutes (U.S.C Title 33, Section 407) and on several occasions during the month of February 1966, inspections revealed that acid was still being deposited into the bay and although Alliance was attempting to correct the situation their actions had not completely negated the pollution (PAS-00049870). The effluent was discharging through a minor leak that was shut down and repaired (PAS-00049871-72). It is unclear if OU2 COCs were associated with this discharge.

A letter from the City of Newark, dated April 27, 1973 reported that Newark's Department of Public Works issued Alliance a Violation of Title 21 Chapter 3-4(b) and 3-6(a) Ordinance for exceedances of biochemical oxygen demand, suspended solids and greasy material in effluent discharge (PAS-00049898). It is unclear if OU2 COCs were associated with this discharge.

The January 24, 1990, *General Information and Site History* document contained a note that on June 6, 1977 Alliance Chemical was issued a Notice of Prosecution for emitting visible smoke from a standby boiler (PAP-00066465). It is unclear if OU2 COCs were associated with this discharge.

According to an January 24, 1990, *General Information and Site History* document, Alliance was cited by NJDEP for the following violations on May 29, 1987, failure to document training, failure to submit a current lay out of the facility, failure to document fire inspections, contingency plan failure to describe actions in emergencies (PAS-00049996).

PVSC gave Alliance Chemical a Notice of Violation for Permit No. 20401088 for discharging corrosive waste that could damage the sewer system between the period of September 6, 1988 and October 6, 1988 (PAP-00066341). It is unclear if OU2 COCs were associated with these discharges.

PVSC issued a Notice of Violation pertaining to Permit No. 20401080 on December 28, 1990 due to sampling analysis identifying exceedances of lead (0.34 mg/L and 0.71 mg/L) in samples collected in November 1990. The permitted daily average was 0.32 mg/L average for lead (PAP-00066412).

On March 17, 1991, PVSC issued Alliance a Sewer Connection Permit No. 20401080 that allowed discharges with pH between 5 and 10.5. In 1988, they violated their permit twice due to pH discharges that were below or exceeded permitted limits (PAP-00066462, PAP-00066417).

NJDEP issued a Notice of Violation on September 6, 1991 for discharge of hazardous materials and failure to notify NJDEP (PAP-00065863). It is unclear if OU2 COCs were associated with these discharges.

PVSC issued Alliance a Notice of Violation on January 28, 1992 for pH exceedances (PAP-00066435).

According to an Administrative Action, on October 1, 1993, NJDEP issued Administrative Orders and Notices of Civil Administrative Penalty Assessments against Alliance alleging violations of the Spill Compensation and Control Act resulting from Alliance's failure to conduct initial integrity testing for twenty aboveground storage tanks (PAP-00216751-52).

According to a PVSC Complaint date December 17, 1993, PVSC monitored Alliance's discharges to the PVSC system to determine its compliance with the Categorical Pretreatment Standards for zinc and cyanide. PVSC advised Alliance to take immediate steps to prevent continued violation of Permit No.20401080 and had failed to comply. Since it was likely to continue to exceed its discharge limitations and adversely affect public health or safety or the operations of the PVSC system, PVSC demanded revoking the sewerage connection permit (PAP-00216733-36).

According to a Settlement Agreement dated August 10, 1994, Alliance agreed to resolve all matters between itself and the PVSC in the December 17, 1993, Complaint (PAP-00216744).

According to a 2006-2007 Natural Resource Damages Settlement Agreement for Groundwater Only, discharges occurred at the Alliance facility and Alliance agreed to pay the balance of any damages for groundwater (PAP-00216790-91). The document does not identify the contaminants discharged to groundwater.

Permits

Alliance filled a RCRA Part- A Hazardous Waste application and received Permit Number NJD045794971 for neutralization of acid waste. They were permitted to store and treat 10,000 gallons of acid waste per day. In 1983, Alliance applied to be delisted as a treatment, storage and disposal facility. The request was granted in 1986 (PAP-00066471).

PVSC received a renewal application of sewer connection permit 20401080 for discharge into a separate sanitary sewer (PAP-00066320-29).

NJDEP Division of Water Resources informed Alliance that a NJDPES permit was not required since their neutralization tank qualified as an Industrial Wastewater Management Facility (PAS-00049992).

On September 17, 1990, Alliance renewed their Sewer Connection Permit 20401080 (PAP-00066368-78).

On March 17, 1991, PVSC issued Alliance Sewer Connection Permit 20401080 that allowed discharges with pH between 5 and 10.5 (PAP-00066462, PAP-00066417).

According to a May 12, 2000 Memorandum of Agreement for Non-Residential Properties, Alliance had a PVSC effluent discharge permit and NJDEP air permits associated with air scrubbers (PAP-00066505).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- Preliminary Assessment (1989)
- Phase 1 Preliminary Remedial Investigation (1991)
- Supplemental Investigative Activities & Proposed Soil Sampling Plan (1997)
- Remedial Investigation (2001)
- Preliminary Assessment (2002)
- Remedial Action Selection Report and Remedial Action Work Plan (2005–2012)

Remedial Activities

Sewer

There is no information regarding sewer sampling data in the available file material.

Soil

According to the June 2018 *Remedial Action Report / Remedial Action Work Plan* by Matrix, in September 1988, the New Jersey Turnpike Authority conducted a soil and groundwater investigation at the western portion of the site as part of a planned widening project for the Turnpike. The soil and groundwater sampling results showed elevated levels of several volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, and pesticides. Additional sampling conducted by the Turnpike Authority in October 1989 showed similar results (PAP-00216680). Sampling data are provided above in Section 4 by respective COCs.

According to the *Phase I Preliminary Remedial Investigation* dated October 4, 1991, a total of nine shallow soil borings were collected between September 7 and 15, 1988 (PAP-00066472). "Unknown PAHs" were detected in 5 of 18 soil samples with an estimated concentration of 1,024 mg/kg at a depth of 0 to 6-inches and 30 to 36-inches. Lead was found in almost every sample with concentrations in excess of NJDEP recommended action levels. Lead ranged between 112 mg/kg to 84,200 mg/kg with an average concentration of 5,398 mg/kg. Copper was found in almost every sample at a depth of 0 to 6-inches and 30 to 36-inches (PAP-00066475). Note: copper concentrations were not provided.

According to the June 2018 *Remedial Action Report / Remedial Action Work Plan* by Matrix, in September 1992, Alliance entered into a Memorandum of Agreement (MOA) with the NJDEP to conduct supplemental soil sampling at the site. The sampling results revealed concentrations of benzo(a)pyrene, 2,4-dinitrophenol, 3,3-dichlorobenzidine, lead and zinc at concentrations in excess of the then applicable NJDEP restricted use direct contact soil cleanup criteria (SCC). A Supplemental Soil Sampling Work Plan for Area A was submitted to the NJDEP in January 2001 to provide for the additional delineation of contamination detected during the 1998 investigation (PAP-00216680). Note: the MOA and concentrations were not provided in documents.

According to a letter dated February 29, 2000, NJDEP notified Alliance that they had not received any response to the September 24, 1992, MOA where NJDEP offered oversight of remedial activities under the Voluntary Cleanup Program. Alliance was notified that NJDEP assumed Alliance no longer wished to participate in the Voluntary Cleanup Program. The 1992 MOA was terminated (PAP-00065911).

According to the 2005 *Remedial Action Selection Report and Remedial Action Work Plan* prepared by ARM Group, in 2003, the majority of the buildings were demolished; the site was leveled, and the majority of the site was covered with geotextile fabric (PAP-00065772). The drainage trenches, neutralization pit, tanks, etc. were cleaned and removed. The site was covered with approximately 6-8 inches of crushed rock and

asphalt millings (PAP-00065779). Elevated contaminant concentrations were found to be generally consistent with that expected from historic site operations primarily in the western half of the site. Impacts were largely related to operation of the wastewater lagoon and neutralization pit (PAP-00065773, PAP-00065788). Site-related constituents were delineated to unrestricted use soil cleanup standards with some minor gaps along the western and northern boundaries. Samples were not collected in these areas due to off-site restrictions posed by the New Jersey Department of Transportation and the turnpike embankment posed logistical constraints (PAP-00065788). The selected remedial approach included: 1) engineering and institutional controls to prevent removal of the cap or residential use, 2) a CEA and well restriction area and 3) hot-spot soil treatment in the western portion of the site and monitoring (PAP-00065795-97).

The 2008–2012 *Remedial Action Progress Reports* showed soil mixing and chemical treatment activities. Follow-up soil and groundwater sampling noted a reduction in soil constituent concentrations to 80% on average (PAP-00066000). Site-related constituents of concern were still present in 2009 in the central portion of the site, but additional chemical injection within this area addressed contaminant mass removal (PAP-00066021). In 2010, ARM Group, Inc. conducted in-situ chemical oxidation via soil mixing in the central portion of the site that resulted in a significant contaminant mass removal. Sampling results are not provided (PAP-00066036). The 2011 Progress Report states constituents of concern were still present in the central portion of the site (PAP-00066051).

A Deed Notice dated October 24, 2019 stated that soil contamination was remediated by Pfister Chemical and that contamination remained, resulting in restricted land uses and the placement of engineering controls in the form of a geotextile fabric and aggregate cap and existing building slab (PAP-00403645-79, PAP-00487838-39).[9]

8. Summary of Asserted Defenses

No legal defenses were identified in the available file materials.

[9] This Report was revised to include documents received on March 19, 2020. The additional documents did not change Alliance Chemical's previous certification.

Facility Data Report

ARKEMA, INC. (f/k/a Pennwalt Corporation. Elf Atochem North America Inc., Atochem North America Inc., and Atofina Inc.)

Facility Name, Address and Size: Arkema, Inc. /Wallace and Tiernan, Inc./Elf Atochem North America Inc./Pennwalt Corporation; 25 and 67 Main Street, Belleville, New Jersey (PAP-00009350). A third parcel located at 2120-2156 McCarter Highway, Newark, NJ (approximately one block away from the 25 and 67 Main Street parcels) was purchased by Wallace and Tiernan in 1950 and was utilized primarily for employee parking and equipment storage. 25 Main Street was approximately 7 acres and 67 Main Street was approximately 0.5 acres (PAP-00009330); numbers of employees varied over time depending on production but in 1988 were 802 employees, operating two shifts, five days per week (PAP-00351386; PAS-00102665).

1. **Business Type:** Manufacturing of measurement and control equipment, including chlorinators, pressure instruments, flow meters, dry chemical feed systems, and cathodic protection systems (PAS-00102626).

2. **Time Period of Ownership/Operations**

25 Main Street

Operator: 1921-1989
Owner: 1921- May 25, 1989 (PAS-00102557; PAS-00049222; PAS-00352822)

67 Main Street

Operator: 1964- May 25, 1989
Owner: 1964- May 25, 1989 (PAS-00102626; PAS-00352822)

1920s: According to a 1990 *ECRA Sampling Report* and *Phase II Sampling Plan*, the facility at 25 Main Street was purchased by Wallace and Tiernan (W&T) in 1918 (PAS-00102618-26); however, a January 29, 1999, *Supplemental Remedial Investigation Report/Remedial Action Work Plan Addendum* states that the site was the location of the W&T manufacturing facility from approximately 1920 to 1997 (PAS-00102554-7). In addition, the date that operations began vary in the available references. A 1994 *Generator Inspection Report* created by a subsequent owner/operator after the 1989 sale states that the operations began on site in 1915 (PAS-00102665). A May 30, 2017, letter written by Glenn A. Harris, counsel for Arkema, states that operations began in approximately 1921 (PAS-00049222). The *History of Wallace & Tiernan* states that the W&T business was started in New York and did not move to New Jersey until the purchase of a single building on Mill Street in Belleville in 1921 (PAP-00352822).

1964: The 67 Main Street parcel, a former gasoline service station located adjacent to the northeast comer of the site, was purchased by W&T in 1964 (PAS-00102626).

1969: The May 30, 2017, letter written by Glenn A. Harris, counsel for Arkema states that W&T was merged into Arkema in 1969, following which the site was operated as W&T, Division of Arkema (PAS-00049222).

1989: Arkema sold all three parcels of the site on May 25, 1989 (PAS-00049222; PAP-00402422; 28). A 2002 *Remedial Action Report* states that in 1989, the property was sold by Pennwalt Corporation (now ATOFINA and formerly Elf Atochem North America, Inc.) to W&T (PAP-00009182). The 1990 *ECRA Sampling Report,* states that the ownership of the property was transferred to W&T when it became a separate company from the former Pennwalt Corporation (PAS-00102623; PAP-00402422-26; 28).

1989-1991: The facility was owned / operated by the W&T management buyout group (PAS-00102623; PAP-00402422-26; 28; PAP-00351375).

1991: According to the February 15, 2006 letter written by Paula A. Martin of Counsel to Arkema Inc., the facility was acquired via a stock purchase agreement by Northwest Water Group PLC (NWW), NWW's name was later changed to United Utilities PLC, they operated the Facility until the Facility closed in 1995 (PAP-00351375).

1998: On November 17, 1998, Belleville Industrial Properties, L.L.C. was deeded ownership of the former W&T facility located at 25 Main Street and 67 Main Street (PAP-00351356-60).

A figure depicting the facility location is below (PAP-00351570):

3. Operational History/COC Use and Presence at the Facility

25 Main Street

According to the 1990 *ECRA Sampling Report and Phase II Sampling Plan*, since 1918 the 25 Main Street site has been used to manufacture chlorinators, pressure instruments, flow meters, dry chemical feed systems, and cathodic protection systems. For the manufacture of these products, a variety of industrial operations were performed on-site, including milling and lathing in a machine shop, plastic molding, plating, heat-treating, painting, assembly, testing and packaging (PAS-00102626). The facility used a variety of hazardous substances including, but not limited to, solvents, cutting oils, chemicals, coolants, paints, petroleum products, primers, thinners, and lubricants (PAP-00351360).

In addition, W&T manufactured potable water and wastewater treatment equipment such as pumps, flowmeters, and controls. To accomplish this process, the facility took in raw materials such as brass, iron, stainless steel, steel, plastics, or rubber in such forms as sheets, bars, tubing and piping, and cut them to company specifications. These materials were then machined, stamped, cut, or drilled before they were washed in a hot alkaline solution, rinsed and dried. From this step, the materials could be plated, painted, welded, deburred or a combination of these steps before being routed through different departments for assembly and shipment to customers (PAS-00102668). The plating area of the site consisted of seven metal finishing lines and a waste rinse water treatment system. The company plated with metals such as copper, nickel, gold, silver, zinc phosphate, and chrome. In this area, a hazardous wastewater sludge was generated from one press. The treatment system for rinse water used a cyanide destruction method and settling tank to remove solids before the water was discharged to the Passaic Valley Sewerage Commission (PVSC) system per W&T's permit. The plating baths were to be cleaned periodically when needed which also generated various other plating line hazardous wastes (PAP-00351128; PAS-00102669-70; PAS-00102717).

According to a 1980 *Selected Substance Report* (SSR), W&T used copper anodes (maximum inventory 850 pounds) in electroplating. Most of the copper was plated onto the product; however, there was a possibility of copper loss through dragout (PAP-00351777). The dragout tank had no outlet. The part being plated would then go to the rinse tank which was connected to the municipal sewer system. Periodically, the contents of the dragout tanks were transferred to 55-gallon drums and disposed of at an approved disposal facility. Concentrations of material in the discharge from the rinse tanks to the municipal sewer system had not been established, but the facility stated they estimated those concentrations to be minimal (PAP-00351778). Copper cyanide (maximum inventory 120 pounds) also was used to accelerate the electrolytic process. It remained in the tank but was gradually depleted and had to be replenished (PAP-00351779). Copper, other than in plating (maximum inventory 52,444 pounds), was also used in machining and fabrication operations at the site (PAP-00351825).

With respect to plating waste generation, a *TSD Facility Annual Report* from 1982 reported W&T had generated three drums of copper plating liquid and one drum of sludge from the plating sludge pit. That year, W&T shipped out five drums of copper plating solution and zero drums of sludge. In 1981, three drums of sludge and three drums of copper plating solution were on hand (PAP-00351759). A *Hazardous Waste Facility Annual Report* for 1984 notes that waste generated that year included 200 gallons of copper plating solution and 200 gallons of wastewater sludge from electroplating. Both were noted to be handled by handling method S01 (PAS-00102716-17). Note: According to a Hazardous Waste Permit Application for an unrelated facility code S01 corresponds to gallon or liter container storage (barrel, drum, etc.) (PAS-00044392).

In addition to plating wastes, the facility generated several other hazardous waste streams during operations. The main waste stream generated was waste cutting/cooling, and lube oil from the automatic screw department as well as the drill press, computer operated machining, assembly, and lathing/cutting departments. In addition, waste paint-related material was generated from the paint shop on site (PAS-00102669). According to a July 10, 1989, *Site Evaluation Submission (SES)*, spent solvents, waste oils and paint thinners were handled as hazardous wastes and were sent to an authorized off-site treatment/disposal facilities or to approved recovery/reclamation services (PAP-00351128-29).

The 1980 SSR reported lead (maximum inventory 170 pounds) was used in litharge powder and was mixed with glycerine to make a sealant which was used in a variety of products. Litharge powder was 99.5% lead monoxide (PAP-00351790). Lead naphthenate (maximum inventory 18 pounds) was used to lubricate gears in a number of assemblies (PAP-00351791). Lead (maximum inventory 13,456 pounds) was also used in the machining and fabrication of a variety of finished products. It was also found in paint and solder (PAP-00351827). Lead waste was generated from one of three Litharge stations in the assembly area (PAS-00102669).

The 1980 SSR also reported mercury (maximum inventory 875 pounds) were used in the production of pressure-measuring instruments such as primary standards and calibration equipment, testing of monometers and shipped to customers for use in mercurial monometers (PAP-00351792).

According to a 1987 *Worker and Community Right to Know Act Environmental Survey and Emergency Services Information Survey*, 10-100 pounds of mercury, 101-1,000 pounds of lead compounds, 10-100 gallons of lead compound soluble, 10-100 pounds of copper cyanide, less than 10 pounds of copper coil wire, less than 10 gallons of copper compounds, and 10-100 pounds of mercury were stored at the facility (PAP-00351551-58). According to a *Community Right to Know Survey* for 1988, W&T stored copper in Buildings 3, 6 and 32. Lead was stored in Buildings 3, 4 and 32, and mercury was stored in Building 3 (PAP-00351397-99, 418-23).

The North Yard portion of the site was used for receiving raw materials and for hazardous waste storage. Raw materials were received and stored on the concrete floor of Building 31, which was torn down in 1964. Waste metal shavings were also stored on this slab until they were shipped off-site for recycling. The hazardous waste storage area was located to the east, adjacent to this area, in a covered, open-sided shed located on an asphalt surface (PAP-00351255). Three storm drains received runoff from the North Yard area (PAP-00352594).

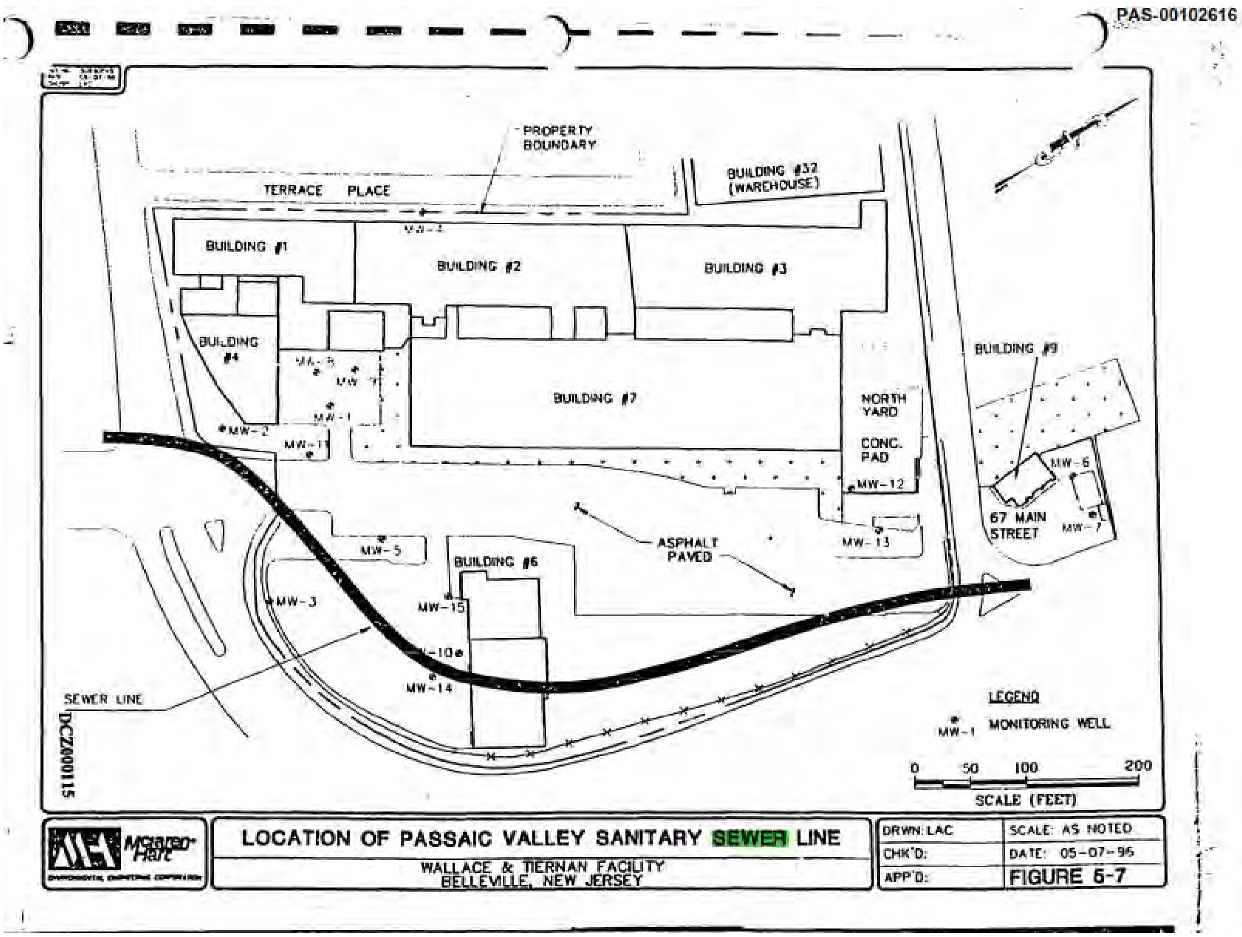
According to a 1987 *Worker and Community Right to Know Act Emergency Services Information Survey*, a total range of 10,001-50,000 gallons of fuel oil, 10-100 gallons of naptha solvent, 10-100 gallons of petroleum distillates, 101-1,000 gallons of petroleum oil and 101-1,000 gallons of petroleum spirits were stored at the 25 Main Street site (PAP-00351557-59). In addition, according to a *Community Right to Know Survey* for 1988, W&T stored fuel oil to the east of the boiler room under a concrete pad. Waste oil was stored in the North Yard. Paints were stored in Buildings 3, 4 and 32. Petroleum distillates and oil were stored in Buildings 2, 3, 4, 6 and 32 (PAP-00351407, 435-443, 458).

According to a July 17, 1987 Hazardous Waste Site Questionnaire, W&T disposed of 2,400 gallons of Bulk Liquid X-726 (Waste Oils), 1,517 gallons of Bulk Liquid X722 (Waste Oil N.O.S), and 1,500 pounds of F006 Solid-Drums Hazardous Waste Solid ORME (Wastewater treatment sludges from electroplating operations) in 1986 (PAP-00466426).[1]

The 1990 *ECRA Sampling Report and Phase II Sampling Plan* reported that the boiler for the W&T site was, at the time, oil-fired but was formerly coal-fired. Coal storage reportedly was in the vicinity of Building 7. The change in fuels occurred during the 1940s and Building 7 was subsequently constructed in 1968 (PAP-00352586).

The facility layout, building numbers, and location of the PVSC sewer line are depicted below (PAS-00102616):

[1] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.



67 Main Street

The property at 67 Main Street was purchased by W&T in 1964. No manufacturing operations were reportedly conducted at this property. The reported use of 67 Main Street was for maintenance and truck parking. Prior to W&T's purchase, the property was operated as a retail gasoline sales and service station, and earlier, as a restaurant (PAP-00351360).

McCarter Highway

According to a 1989 *Site Evaluation Submission (SES),* W&T has owned this property since 1950. No manufacturing operations were conducted on this site by W&T. A major portion of this property was paved and used for employees parking. Several buildings were located on the site which were used to store equipment, building materials (wood, metal), old office equipment and some machinery. For a brief period in the early 1980s certain drummed wastes from the manufacturing operations at 25 Main Street were temporarily stored on the property prior to off-site disposal (PAP-00352633). An inactive 2,000-gallon UST containing No. 2 fuel oil was located east of Building 6S and installed before the 1950s at this location (PAP-00352626).

According to the 1989 *Site Evaluation Submission (SES)*, no known spill incidents or discharges of hazardous substances or wastes have occurred at this site (PAP-00352627). When the W&T business was sold by Pennwalt (now Arkema) in 1989, DEP issued an ECRA Negative Declaration for this parcel (PAP-00352639).

4. Identified COCs

- PCBs (used, detected)
- PAHs (used, detected)
- Mercury (used, stored)
- Copper (used, stored, generated)
- Lead (used, stored, generated)

PCBs

According to the Monsanto Sale records, the following amount of Aroclor 1248 were purchased by the facility: 450 pounds in 1959, 300 pounds in 1962 and 165 pounds in 1963, 165 pounds in 1965, 330 pounds in 1966, and 330 pounds in 1967 (PAP-00304327-33, 368, 374, 422, 429).

A December 7, 1984, W&T letter regarding an EPA inspection states that the facility had seven liquid-cooled transformers, which were located in Building 2, one of which contained "marginal levels" of polychlorinated biphenyls (PCBs) (PAP-00351573).

A January 29, 1987, *Pennwalt Telephone Conversation Memo* discusses the potential disposal of two small electrical capacitors with PCBs to Banks Landfill in Pennsylvania (PAP-00351577).

A February 2, 1989, *Loss Prevention Report* discusses approximately 20 capacitors containing 1.9 gallons of PCB oil being disposed of in metal drums "per EPA guidelines" as the capacitors were no longer needed at the site (PAP-00351566).

According to the September 28, 1990, *ECRA Sampling Report and Phase II Sampling Plan,* PCBs were detected in a background soil boring (B-33 at 0 to 0.5 bgs), in a spill area at the warehouse loading bay (S-10 at 1.25 to 1.5 bgs), in a post-excavation soil sample near building 7 in the North Yard area, and in the plating room condensate drain. It was reported that the PCB concentrations in all of these areas did not exceed the "suggested ECRA [Environmental Cleanup Responsibility Act] action levels" for PCBs (PAP-00352603-04; PAP-00352609). Note: Table 1 and 6 with sampling results was not included in the report.

According to the *Evaluation of Site-Related COCs at the Former W&T Facility,* dated July 20, 2018, the following concentrations of PCBs were detected at the facility in on-site soil samples (PAP-00726494-550).

PCB Concentrations (mg/kg) In On-Site Soil Samples	
Area of Concern	**Concentration**
Background	0.59
North Yard Area	0.54
Plating Room Condensate Drain	2.5
Post-Excavation: Building 7	1.89 J
Warehouse Loading Bay	0.55

J: Estimated

PAHs

According to the *1990 ECRA Sampling Report and Phase II Sampling Plan,* the boiler room tank farm at 25 Main Street consisted of two 20,000-gallon capacity heating oil underground storage tanks (USTs) (Tanks 3 and 4); one 2,000-gallon capacity heating oil UST (Tank 6) and one UST (Tank 11) whose contents and capacity were unknown. Tank 6 was abandoned in place on May 1, 1990. Tanks 3 and 4 were connected and enclosed in a polyethylene liner and concrete slab. Tank 11 was discovered on June 15, 1990, and emptied on September 13, 1990 (PAP-00352592). During investigation, stained soil and petroleum odors were observed starting at depths of 8-10 feet and oil-saturated soils were observed at 8-14 feet below grade. Two soil samples contained base/neutrals and acids (BNAs) [which can include polynuclear aromatic hydrocarbons (PAHs)] at concentrations of 16.1 parts per million (ppm) and 10.86 ppm (PAP-00352605).

According to the 1989 *ECRA Sampling Plan*, one 1,000-gallon UST containing No. 2 fuel oil (Tank 7) was located south of Building 9 at 67 Main Street (PAP-00351256). Four samples were to be collected from 8-8.5 ft bgs and analyzed for PAHs (PAP-00351268).

On May 1, 1990, Tank 7 was emptied, removed according to NJDEP guidelines and backfilled with stockpiled excavated soil and certified clean fill (PAP-00352599). Note: Table 8 – Summary of Analytical Results – Tank 7 Post-excavation Samples was not included in the report (PAP-00352581).

According to the September 1990 *ECRA Sampling Report and Phase II Sampling Plan,* a 550-gallon UST (Tank 10) of unknown contents was found on May 23, 1990, at 67 Main Street, and appeared to have been improperly abandoned in place. Oily water was found inside the tank and analysis showed it was likely No. 2 fuel oil (PAP-00352599). On May 23, 1990, the tank was emptied and removed. Stained soil was observed during excavation and removed. Groundwater was encountered at the bottom of the excavation, at approximately six feet below grade (PAP-00352599-600). BNs were detected in soil at a maximum concentration of 113 mg/kg (PE-16 at 5.5 to 6 feet bgs) (PAP-00352611).

The 1990 *ECRA Sampling Report and Phase II Sampling Plan* states that at a spill area located in the warehouse loading bay, the" suggested ECRA action levels" were exceeded for BNA (88.26 mg/kg) which were predominantly composed of PAHs (PAS-00102649).

According to the *Evaluation of Site-Related COCs at the Former W&T Facility,* dated July 20, 2018, the following maximum concentrations of PAHs were detected at the facility in on-site soil samples (PAP-00726494-551).

Max PAH Concentrations (mg/kg) In On-Site Soil Samples						
PAH	**Boiler Room**	**Hydraulic Pit**	**North Yard**	**Plating Room**	**Warehouse Loading Bay**	**Perimeter Area**
Benzo(a)anthracene	35	270	9.8	20	31+	21
Benzo(a)pyrene	32	200	11	12J	29+	19
Benzo(b)fluoranthene	38	250	14	20	35+	25
Benzo(k)fluoranthene	17J	130	4	5.6	14+	10
Chrysene	32	250	12	27	31+	22
Dibenzo(a,h)anthracene	4.8J	38J	N/A	2.4J	3.1+	3
Indeno(1,2,3-cd)pyrene	16J	140	6.6	4.9J	15+	11

J: Estimated Value
+:Semivolatile analysis results showed low percent recovery and high relative percent difference for isolated compounds on one matrix spike sample and one matrix spike duplicate sample.

Metals – Copper, Lead, and Mercury

A March 31, 1975, *PVSC Waste Effluent Survey* reported maximum total daily discharges of copper 0.4 milligrams per liter (mg/L), lead (<0.2 mg/L) and mercury (<0.0005 mg/L) in facility wastewater (PAP-00351621).

A 1980 PVSC *Sewer Connection Application* reported concentrations of copper (1.45 mg/L), lead (0.25 mg/L) and mercury (0.0085 mg/L) in wastewater effluent (PAP-00351688, 90).

An April 15, 1982, *Baseline Report* reported maximum one-day concentrations of copper (5.05 mg/L) above the pretreatment standards for existing sources (PSES) of 4.5 mg/L per day. Copper concentrations were 2.7 mg/L for the four-day average and consistent with the 2.7 mg/L PSES limit. Lead effluent concentrations (0.2 mg/L maximum/day, <0.09 mg/L four-day average) were below the PSES limits of 0.6 mg/L maximum per day and the 0.4 mg/L four-day average (PAP-00351661).

A June 25, 1984, *Baseline Report* reported maximum one-day concentrations of copper (5.05 mg/L) above the PSES of 3.38 mg/L per day. Copper concentrations were 2.74 mg/L for the four-day average and above the 2.07 mg/L PSES monthly average limit. Lead effluent concentrations (0.2 mg/L maximum/day, 0.09 mg/L four-day average) were below the PSES limits of 0.69 mg/L maximum per day and 0.43 mg/L monthly average (PAP-00351636).

According to a 1985 PVSC Application, copper (0.656 mg/L), lead (<0.025 mg/L) and mercury (0.0015 mg/L) were reported in effluent from outlet 1 while outlet 2 only had detections of mercury (<0.0005 mg/L) (PAP-00352202-03). However, the *Pretreatment Discharge Monitoring Report* for outlet 2 reported copper (0.391 mg/L) and lead (<0.025 mg/L) concentrations for that same year (PAP-00352219, 2223).

According to a February 4, 1986 PVSC *Permit Renewal Application* (No. 01402162), samples of discharge at outlet 2 contained 0.346 mg/L copper, <0.025 mg/L lead and <0.0005 mg/L mercury (PAP-00351667-68, 73). Data for outlet 1 were not available.

An October 26, 1982, *Report of Analysis* from W&T's sludge waste reported a maximum concentration of 55.89 milligrams per kilogram (mg/kg) of copper (no maximum allowable level), 1.63 mg/kg of lead (maximum allowable level 5.0 mg/kg), and 0.0014 mg/kg mercury (maximum allowable level 0.2 mg/kg) (PAP-00351714-15).

According to a 1984 *Hazardous Waste Facility Annual Report*, the facility generated 200 gallons of copper plating solution that year (PAS-00102716-17).

According to a New Jersey Department of Environmental Protection (NJDEP) *Hazardous Waste Generator Waste Minimization Report* for 1986, W&T generated a total of 2,400 gallons of plating waste, 5,250 pounds of plating effluent waste, 200 gallons of paint waste, and 2,265 gallons of used lubricating oils from W&T's manufacturing facilities in 1985 (PAP-00351735-37).

As reported by an October 1988 *Waste Stream Characterization Record,* approximately 50 55-gallon drums of pre-effluent sludge containing copper from plating operations was produced annually (PAP-00351749-50).

A sample of accumulated solids (S-17A) was collected from the catch basin outside the loading bay at Building 4. Copper (1,230 mg/kg) and mercury (3.1 mg/kg) were detected. The sediments in the catch basin were removed for disposal during the sampling plan implementation in order to verify the catch basin's structural integrity (PAS-00102650).

The North Yard portion of the site was used for receiving raw materials and for hazardous waste storage. Raw materials were received and stored on the concrete floor of Building 31, which was torn down in 1964. Waste metal shavings were also stored on this slab until they were shipped off-site for recycling. The hazardous waste storage area was located to the east, adjacent to this area in a covered, open-sided shed located on an asphalt surface (PAP-00351255). Three storm drains received runoff from the North Yard area (PAP-00352594). A soil sample collected to the south of the North Yard (S-7 at 1.5 to 2 feet bgs) contained copper (302 mg/kg) and mercury (6.2 mg/kg) (PAP-00352607).

In addition, the 1990 *ECRA Sampling Report and Phase II Sampling Plan* notes that catch basin sampling conducted at the North Yard drum storage area identified elevated levels of metals, including copper and mercury. The copper concentrations ranged from 2,320 mg/kg to 4,220 mg/kg. The mercury concentrations ranged from 4.1 mg/kg to 8.1 mg/kg (PAS-00102647).

According to the *Evaluation of Site-Related COCs at the Former W&T Facility,* dated July 20, 2018, the following maximum concentrations of metals were detected in on-site soil samples at the facility (PAP- PAP-00726494-550).

Metal Concentrations (mg/kg) In On-Site Soil Samples							
Metal	**Boiler Room**	**Catch Basin**	**Former UST**	**North Yard**	**Plating Room**	**Unpaved Area**	**Warehouse Loading Bay**
Copper	337	1,230	N/A	4,220	1,660	13	90.4
Lead	208	345	196	704	2,740	11	640
Mercury	0.99	3.1	N/A	8.1	19.5	N/A	0.6

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[2]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[3] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[4] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[5]

The fill generally consisted of red-brown, fine to medium sand with trace silt and trace gravel. The thickness of the fill ranged from six to 12 feet (PAS-00102628).

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[2] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

[3] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[4] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[5] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

According to a September 2, 1987 Internal Memo, a paint thinner tank was to be removed at the beginning of next year. The two old gasoline tanks are scheduled for replacement by the end of 1987. New in-ground collection tanks for the plating waste liquids were to be installed by the end of 1987 and installed to meet appropriate regulations (PAP-00466428).[6]

According to the March 6, 2000 Supplemental Remedial Investigation Report / Revised Remedial Action Work Plan Addendum, Sanborn Map review depicts the Warehouse Building (Building No. 32) is not present on the site until 1950 and depict the additional building expansion on the main plant (PAP-00466467).[6]

The levels of PAHs, copper, lead and mercury detected at the site in sils are presented in the table below (PAP-00009098; PAS-00102647; PAP-00726494-550).

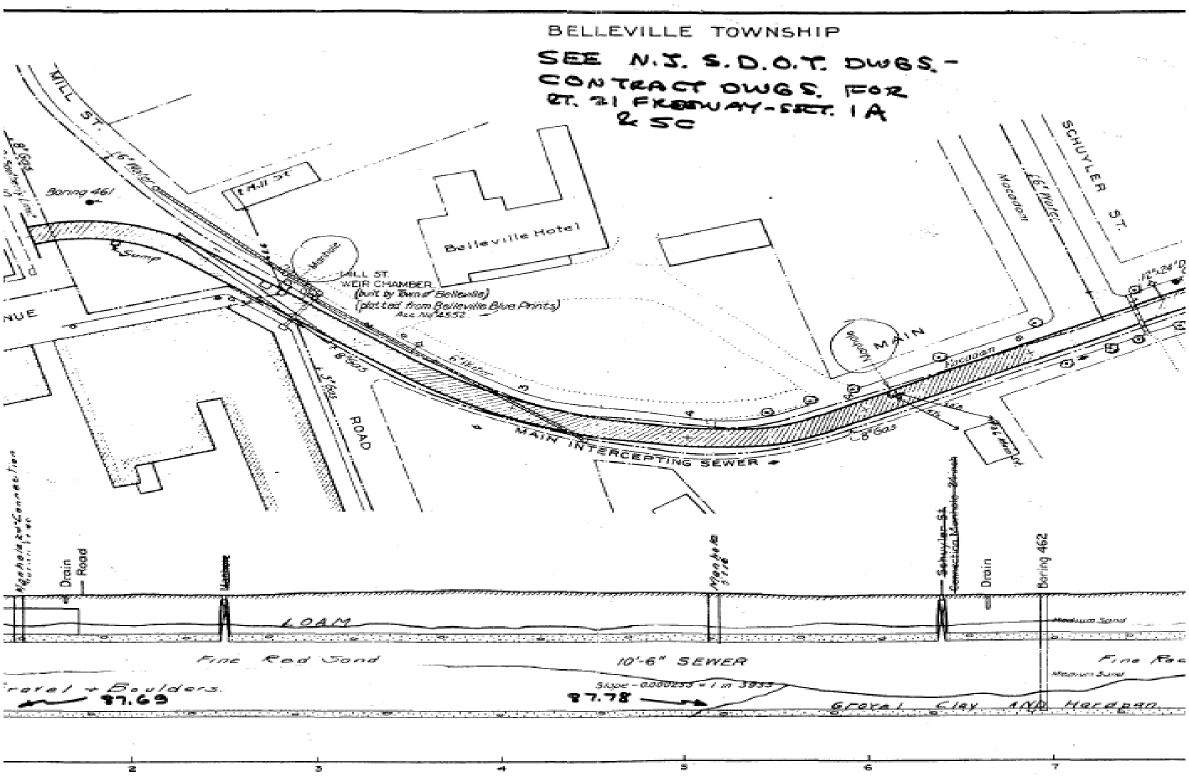
COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	2,740 mg/kg
Copper	4,220 mg/kg
Mercury	19.5 mg/kg
Benzo(a)anthracene	330 mg/kg
Benzo(a)pyrene	220 mg/kg
Benzo(b)fluoranthene	320 mg/kg
Benzo(k)fluoranthene	130 mg/kg
Dibenzo(a,h)anthracene	43 mg/kg
Indeno(1,2,3-cd)pyrene	140 mg/kg

[6] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.

5. COC Pathways

Sanitary Sewer

An October 1, 1912, map of the PVSC Main Intercepting Sewer below shows the PVSC Main Intercepting Sewer in place before the site was purchased in 1921 (PAP-00351640):



The site connects to the Township of Belleville sanitary sewers in Mill Street and in the former Main Street area which in turn connects to the Mill Street Meter Chamber. The site wastewater enters the PVSC Main Intercepting Sewer at the Mill Street Meter chamber. The 10.5-foot inner diameter Main Intercepting Sewer carries wastewater to the PVSC Sewer Treatment Plant in Newark. The Langan Report further notes that review of PVSC mapping shows that there are no downstream overflows / bypasses from the Main Intercepting Sewer to the Passaic River between the Mill Street Meter Chamber and the PVSC Sewage Treatment Plant (PAP-00095354-55; PAP-00095359; PAP-00097691-92; PAP-00097691; PAP-00142693; PAP-00142705; PAP-00142718; PAP-00111225-27). The nearest overflow/bypass for the Main Intercepting Sewer upstream of the Site is at the Yantacaw Bypass, which is approximately 3 miles upstream of the Site. There is an “Inlet Structure” identified on PVSC mapping along the Main Intercepting Sewer approximately 20 feet south of Mill Street that Langan understood was for inspection and maintenance activities only.

An August 10, 1977, *Industrial Sewer Connection Application* reports a total of 204,500 gallons / day of wastewater continuously discharging to the PVSC system and that two industrial processes accounted for most of W&T's industrial water discharge into the sanitary sewerage system. One process discharged into the line which connected to the municipal sewer on Main Street and handled W&T's plating rinse water overflow as well as most of their sanitary waste. The average daily discharge from this operation for 1976 was 83,000 gallons/day (PAP-00351695-700). The other process discharged into the line which connected to the municipal sewer on Mill Street and handled W&Ts water purification equipment test process water as well as some sanitary waste. The average daily discharge in 1976 was 30,000 gallons/day (PAP-00351699).

A July 17, 1980 PVSC *Sewer Connection Application*, reported industrial waste was discharged to the sanitary sewer continuously 5 days a week (PAP-00351685).

According to a 1985 PVSC Application, the daily average flow for outlet 1 was 98,509 gallons and 11,011 gallons for outlet 2 (PAP-00352200).

According to a February 4, 1986 PVSC *Permit Renewal Application* (No. 01402162), the daily average flow for outlet 1 was 98,509 gallons/day and for outlet 2- 11,011 gallons/day. (PAP-00351667-68).

W&T's Waste Effluent Surveys and PVSC applications document the following water data volumes of purchased water and sanitary sewer discharge (PAP-00351684-86; PAP-00351619; PAP-00352198).

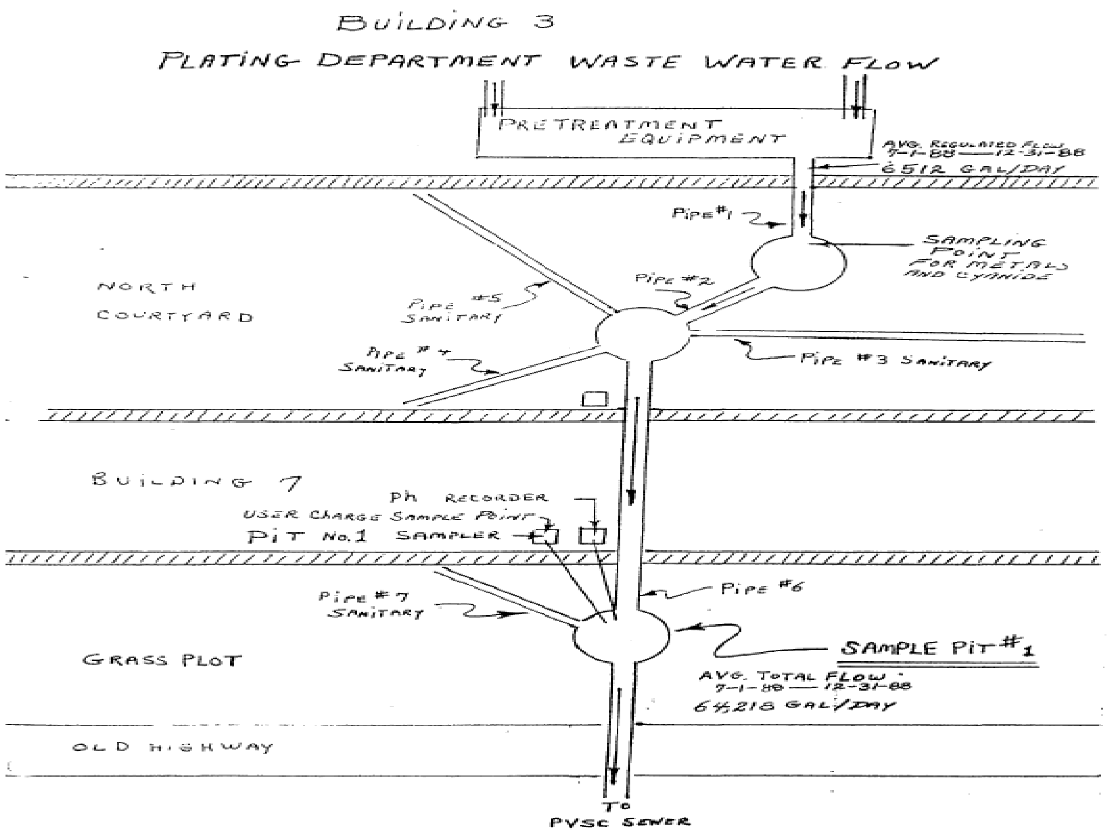
Arkema Discharge and Purchased Water Volumes (in gallons)			
Reporting Year	**Sanitary Water**	**Storm Sewer**	**Total Water Use**
1974	76,691,580	0	77,603,466
1978	64,285,108	0	65,358,638
1985	27,380,128	0	28,821,188

OUTLET * NUMBER	SEWER SIZE (INCHES)	AVERAGE DAILY FLOW (GALLONS)	CONTAINS INDUSTRIAL WASTE (YES OR NO)
1	8"	SANITARY 160,000	YES
2	8"	SANITARY 21,000	YES
3 *	15"	STORM SEWER ONLY	NO
4 *	10"	STORM SEWER ONLY	NO

W&T pre-treated the primary waste stream from plating operations prior to discharge to the PVSC system for pH, sludge, chrome and other metals (PAS-00102711-12; PAP-00351702). The liquid was drained out directly to the PVSC outlet and the sludge was pumped into a press and disposed of off-site (PAP-00351702).

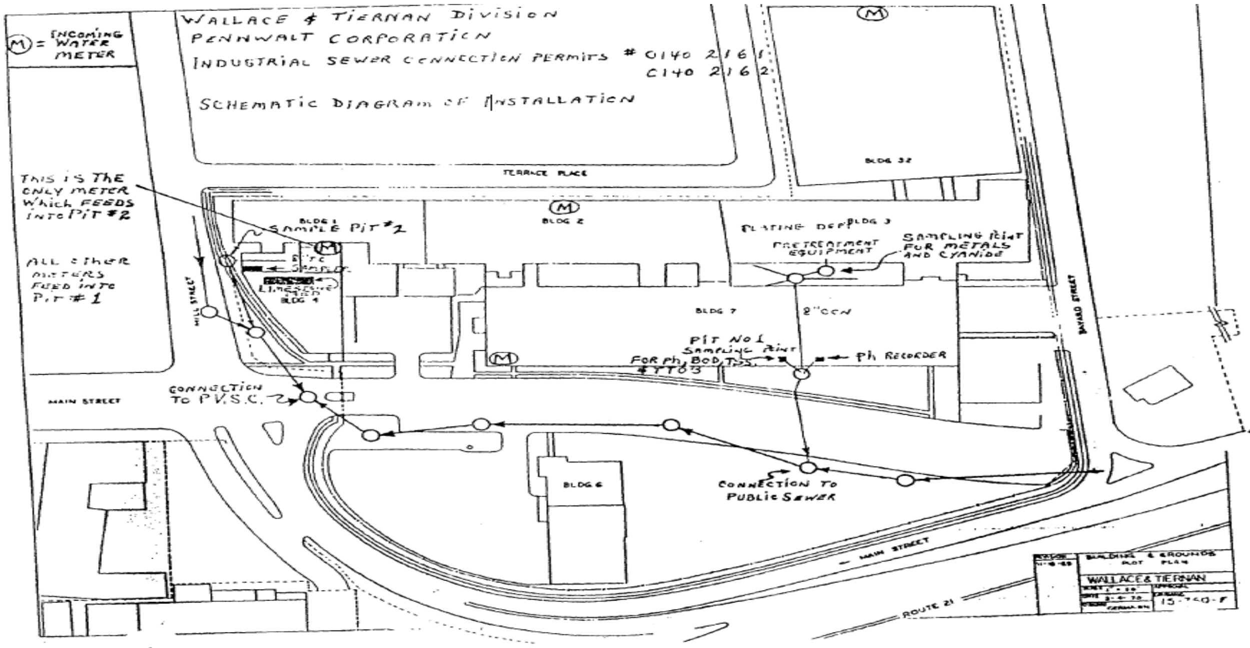
According to a September 29, 1987 Internal Memo, the Plating Department waste water treatment system was online and processing all of the rinse water flow in August (PAP-00466428). According to a September 22, 1988 Internal Memo, W&T achieved compliance with the PVSC requirements for the discharge of copper to their system (PAP-00466436).[7]

A *Pretreatment Monitoring Report* dated January 19, 1989 for the monitoring period 07/01/1988 – 12/31/1988, reported the regulated flow was 6,512 gallons/day with a maximum of 12,750 gallons/day and a total flow of 64,218 gallons/day, with average copper permit limits of 2.070 mg/L and maximum permit limits of 3.380 mg/L, the W&T copper average sample was 0.20 mg/L and the maximum sample was 0.26 mg/L. Lead average permit limits were 0.430 mg/L average and maximum permit limits were 0.690 mg/L, the W&T lead average sample was 0.20 mg/L and the maximum sample was 0.20 mg/L (PAP-00351703). A wastewater flow diagram is depicted below (PAP-00351580):

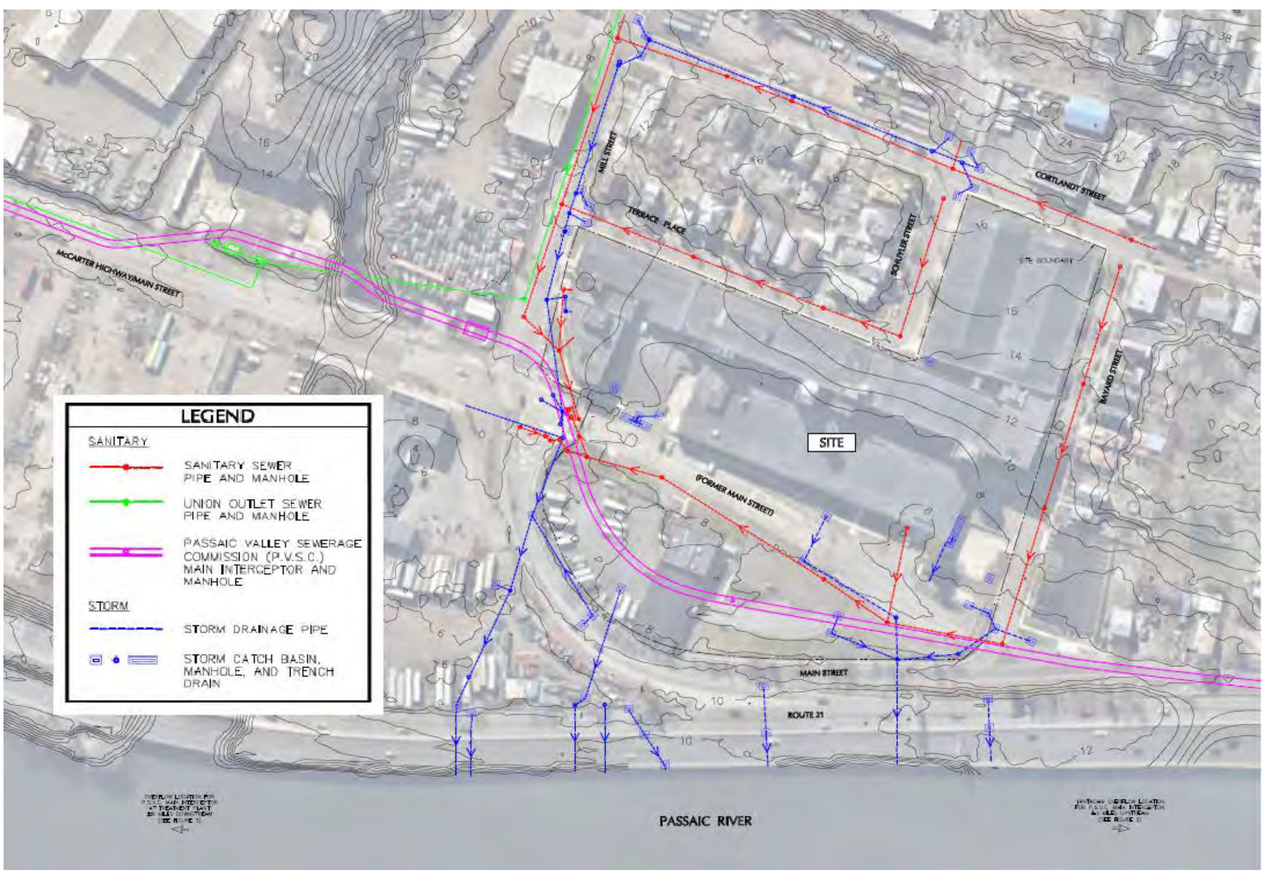


Sewer connections are depicted below.

[7] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.



(PAP-00351579)



(PAP-00726551)

Direct Release

According to a September 15, 1982 Internal Memo regarding the Belleville – Environmental Audit, certain undiked sections of the North Yard hazardous waste drum storage area are within close proximity to a stormwater drain which discharges to the Passaic River. EPA could consider this as a potential environmental hazard since spills or leaks could discharge to the drain (PAP-00466371). [8]

On June 19, 1984 and Internal Memo regarding an Environmental Audit by Doug Loutzenhiser of Pennwalt – King of Prussia, oil was getting into the River via storm drain near the North Yard it was recommended that empty drums stored along Bayard St fence be stored with the bungs at 9 and 3 o'clock positions and not 12 and 6 o'clock, oil has been leaking into storm drain (PAP-00466373). [8]

The April 18, 1986 Preliminary Environmental Audit noted evidence of oil having run to storm drain. Two drums E1606 in waste oil area were empty and no bungs in two drums (PAP-00466379). [8]

According to a June 5, 1987 Internal Memo regarding the Belleville Environmental Assessment Report, noted the measures taken several months ago to curtail waste oil from leaking into the ground has been effective (PAP-00466422).[8]

According to the 1990 *ECRA Sampling Report and Phase II Sampling Plan*, the site is relatively level, sloping very slightly toward the Passaic River. Surface water runoff was diverted via storm drains to the storm sewer system, which discharged to the Passaic River (PAS-00102627). The locations of stormwater outfalls to the Passaic River from the facility are shown in the above image. Stormwater runoff from the site is collected through a series of inlets and trench drains which connect to the municipal storm water sewer system in the streets surrounding the site. The municipal storm sewer system conveys flow from the site and surrounding streets to the Passaic River through a series of outfalls (PAP-00726551).

Spills

According to a May 7, 1986 Close-Out Discussion with Management prepared by M. Dixon, floor drains typically discharge to the storm sewer system and there are areas which appear to present a spill potential, specifically the degreaser area and associate drum storage were located in the vicinity of a storm drain. Cuttings saturated with oil in the North Yard are managed such that oil is allowed to drain to the asphalt. The concern was that rainwater washes the oils to the storm water system. The discussion also noted there is no secondary containment nor other spill control practices for two raw material drum storage areas (one near boilers and the other near the waste drum area in the North Yard with concerns of the close proximity to storm sewers and that there is no secondary containment or other spill control practices for the Unloading Areas (fuel

[8] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.

oil, gasoline, ammonia and paint thinner) to ensure that spillage does not enter the stormwater system (PAP-00466390-92; PAP-00466404-06).[9]

According to a July 21, 1986 Internal Memo regarding the Belleville Environmental Assessment Report, W&T reconditioned the north service yard where scrap metal and waste oil are collected. The western portions of this yard was repaved with new heavy duty concrete. The balance of the yard was reconstructed to accommodate the operation of collecting and disposing of these materials in such a way that waste oil will not enter the storm water system. At the time of this letter the project was in the planning stage and estimated 12 months to be the necessary time to carry out the procedures and actual construction (PAP-00466409).[9]

According to a September 29, 1986 Internal Memo, W&T established initial measures to eliminate entrained oil from washing out of the scrap metal drums and into the storm sewer system. The scrap metal is now be collected in drums that do not have holes in them and covers are placed on top and the spill containment plan for the Maintenance Stock area has been completed and under construction (PAP-00466415-16). According to an August 31, 1988 Environmental Assessment Follow-Up Plant actions to be taken included installing new handling system and repave the yard which was planned for July 1989 (PAP-00466432; PAP-00466446).[9]

An October 21, 1986 Internal Memo, reported all of the floor drains in the buildings were potential hazardous material spills could occur have been sealed off and that the spill containment curbing for the Maintenance Stock are has been completed (PAP-00466419).[9]

According to a July 10, 1989, *Site Evaluation Submission (SES)*, it was possible that minor releases of hydraulic oils and machine cutting oils may have occurred during routine manufacturing operations primarily in the north service yard (PAP-00351083).

According to the September 28, 1990, *ECRA Sampling Report and Phase II Sampling Plan,* stained soil was identified beneath the condensate drains for the ventilator outside the plating room (PAP-00352595). Note: Table 6 – Summary of Analytical Results – Plating Room Compressor Area was not in the available report (PAP-00352581).. In addition, several areas of stained soil were observed outside Building 7. Oil from leaking machinery inside the building seeped through cracks in the wall and had stained the soil adjacent to the building outside the wall. W&T repaired the leaking machinery and the stained soil bordering Building 7 was removed and stockpiled for disposal on July 18, 1990 (PAP-00352596). BNs (32.97 mg/kg) were detected in soil samples (PAP-00352612). Further, oil had discharged from a hose connected to a vacuum pump onto the ground on the west side of Building 1. It was reported that all visibly stained soil was removed and no post-excavation sampling was conducted (PAP-00352596).

[9] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.

According to the September 28, 1990, *ECRA Sampling Report and Phase II Sampling Plan,* there was a former spill in the location of the warehouse loading bay, soil sample S-10 was analyzed for PCBs, metals and PAHs. It was reported that concentrations did not exceed "ECRA action levels" for PCBs: however ECRA action levels were exceeded for BNA (88.26 mg/kg) which were predominantly composed of PAHs (PAP-00352608). Note: Table 6 – Summary of Analytical Results – Warehouse Loading Bay Spill Area was not in the available report (PAP-00352581).

6. Regulatory History/Enforcement Actions

Inspections

A *Report of Inspection* dated December 12 and 20, 1989, based on an inspection that occurred several months after Pennwalt (now Arkema) sold the W&T facility in May 1989,noted deficiencies at the 67 Main Street location stating that the large floor drain or pit was observed to be full of sediment. A compressor on the inside of the building discharged blowdown to the outside. When the boiler for this building was in operation, it also appeared to have discharged blowdown to the exterior (PAS-00102606-07). According to the *ECRA Sampling Report and Phase II Sampling Plan*, the associated stained soil was later removed (PAS-00102639-40). The compressor blow-down pipe was rerouted by W&T, and as a result there was no longer an exterior discharge (PAS-00102642). The sediment in the garage pit was removed and drummed on May 2, 1990. The integrity of the pit was verified to be structurally sound (PAS-00102643). The area around the boiler pipe was also excavated on May 2, 1990 (PAS-00102642).

The December 1989 *Report of Inspection* notes that the exterior of 25 Main Street had staining on the east side of Building 7 in several areas. This staining was coming from oil associated with indoor machinery. In this area, oil was leaking from machine shop-type machinery and traveled along the floor to a seam in the wall where it leaked to the exterior. In the North Yard, there was a heavily stained drum storage area adjacent to the North Yard fence on Bayard Street. Exhaust ventilators for the plating room for Building 3 had condensate drains that were discharging to the soil below, which appeared to be stained (PAS-00102607).

All floor drains at 25 Main Street were reportedly sealed with rubber stoppers. At inspection, an open floor drain was observed inside the pump room of Building 7 (PAS-00102607). Additionally, several machines associated with the deburring process discharged to a floor trench that reportedly discharged to the sanitary sewer (PAS-00102608).

Deficiencies in the interior of Building 3 were noted to include two open pipes inside the plating room in a diked spill containment structure that appeared to lead to the sanitary sewer. The openings of these pipes were well below the rim of the dike. The report noted that if a spill was to occur the possibility existed for a discharge to occur (PAS-00102608).

Building 3 also had condensate blowdowns discharging under four of the five windows on the east side. Under the window in the northeast corner, a stain was accompanied by metal chips (PAS-00102608).

Deficiencies in the interior of Building 4 included a storm drain north of Building 4 that collected runoff from the paved area over tanks 3, 4 and 6 and between Buildings 4 and 7. There was a small drum storage area along the loading ramp and several spills from the loading bay area were observed on the pavement in this area. An oily sheen was observed on the water in this drain (PAS-00102608).

Violations

A September 25, 1986 Notice of Violation reported Pennwalt Corporation was in violation of N.J.A.C.7:26-9.4(g)18 – No Semi – annual drills constructed, N.J.A.C.7:26-9.6(f)1 – Failing to make arrangements to familiarize P.D, F.D and emergency report teams, N.J.A.C.7:26-9 (f)4 – Failing to make arrangements to familiarize local hospitals and N.J.A.C.7:26-9.7(e) and 9.7(i) – No description to coordinate emergency services (PAP-00466417). According to a October 10, 1986 Letter to NJDEP remedial action was taken to achieve compliance (PAP-00466420). [10]

An April 4, 1988 Violation Letter from PVSC reported W&T was in violation of 40 Code of Federal Regulations (CFR) 433 for lead. The results of wastewater discharge samples collected on 12/29/1987 and 12/30/1987 had lead concentrations of 0.74 mg/L and 1.41 mg/L, respectively, above the limit of 0.69 mg/L (PAP-00351641). On April 8, 1988, W&T's response letter reported lead was not used in their metal finishing operation (the plating operation) and their analysis of effluent had not shown any "excessive" lead (PAP-00351643). Weekly samples collected until compliance was achieved had maximum concentrations of lead at 0.101 mg/L in Pit 1 and 0.027 mg/L in eyewash in composite samples (PAP-00351645-51).

An August 15, 1988 Violation Letter from PVSC reported W&T was in violation 40 CFR 433 for copper (monthly average) under PVSC permit (No. 01402162). W&T was directed to collect weekly samples until three consecutive analyses were within permit limitations (PAP-00351653). On August 24, 1988, W&T reported compliance with concentrations of copper ranging from 0.168 mg/L to 0.271 mg/L (PAP-00351655).

Permits

In 1977, W&T submitted an Industrial Sewer Connection Application for wastewater discharges to the PVSC system (PAP-00351695).

In 1981, W&T held PVSC permit (No. 01402162) and was authorized to discharge from two outlets (PAP-00351582, 86-87).

[10] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.

W&T submitted a PVSC Application for renewal of a Sewer Connection Permit (No. 01402162) on February 4, 1986 (PAP-00351664-671).

7. Response Actions

According to an October 22, 2002 deed notice, in 1989, the sale of W&T triggered compliance with the NJDEP ECRA (PAP-00351360).

Characterization Activities

The following characterization activities have taken place at the facility:

- Final Remedial Investigation / Remedial Action Report, September 1995 (PAP-00008845).
- Supplemental Remedial Investigation Report / Remedial Action Work Plan Addendum, January 1999 (PAP-00009057).
- Supplemental Remedial Investigation Report / Revised Remedial Action Work Plan Addendum, March 2000 (PAP-00466449).[11]
- Remedial Action Report, March 2002 (PAP-00009178).

Phase I-IV 1990-1995: Phase I-IV of the investigation and remediation were performed between 1990 and 1995, and included soil and groundwater sampling and analysis, decommissioning of six USTs, excavation and disposal of contaminated soil, and recovery of free product from the groundwater (PAP-00351361). This included the collection and analysis of soil samples to determine the impact of a possible past spill. Analytical results for soil samples identified concentrations of lead and PAHs at the warehouse loading bay/perimeter area as well as in the hydraulic lift area (PAP-00009173-74). Sampling concentration data are provided below.

Supplemental Remedial Investigation 1999: The work completed addressed NJDEP requirements for the remaining soil areas of concern (AOCs). Compounds in soil at the boiler room area, North Yard area, hydraulic lift area and former gasoline piping area, warehouse loading bay and site perimeter were horizontally and vertically delineated. Sampling concentration data are provided below.

[11] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.

Soil

April 29, 1998
In accordance with the *Workplan Addendum* dated February 17, 1998, two soil samples and a field duplicate (WH-11, WH-12 and WH-12D) were collected in the warehouse loading bay area for PAHs. The data results are shown in the table below (PAP-00009097).

Sample Location:	NJDEP 1996 REVISED SOIL CLEANUP CRITERIA				WH-11	WH-12	WH-12D	WH-14	WH-18	WH-18D	WH-25R
Sample Depth (ft):					0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Langan Sample Number:					516	517	518	527	532	532	542
Laboratory Sample Number:	DIRECT CONTACT		IMPACT		57880	57881	57882	59539	67687	67688	70621
Sample Date:	RESIDENT.	NON-RESIDENT.	TO G.W.		4/29/98	4/29/98	4/29/98	5/7/98	6/22/98	6/22/98	7/9/98
Parameters				Units	Q	Q	Q	Q	Q	Q	Q
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)											
Naphthalene	230	4,200	100	ppm	1.7 J	12	18 J	11	7 J	14 J	17 J
Acenaphthylene	NS	NS	NS	ppm	1.1 J	1.2 J	1.4 J	0.74	0.830 J	1.1 J	0.66 J
Acenaphthene	3,400	10,000	100	ppm	1 J	18	36	16	12 J	20	23 J
Fluorene	2,300	10,000	100	ppm	1 J	17	33	14	10 J	20	22 J
Phenanthrene	NS	NS	NS	ppm	14	180	200	120	88	140	180
Anthracene	10,000	10,000	100	ppm	2.3	34	57	25	20	32	41
Fluoranthene	2,300	10,000	100	ppm	20	180	210	110	86	130	170
Pyrene	1,700	10,000	100	ppm	16	130	170	88	68	98	140
Benzo (a) anthracene	0.9	4	500	ppm	7.8	87	95	47	36	52	72
Chrysene	9	40	500	ppm	9.7	87	88	48	38	54	70
Benzo (b) fluoranthene	0.9	4	50	ppm	14	77	100	48	39	57	67
Benzo (k) fluoranthene	0.9	4	500	ppm	4.8	35	100	20	19	26	29
Benzo (a) pyrene (BaP)	0.66	0.66	100	ppm	8.4	54	82	37	30	44	53
Indeno (1,2,3-c,d) pyrene	0.9	4	500	ppm	2.7	14	38	19	17	25	31
Dibenzo (a,h) anthracene	0.66	0.66	100	ppm	0.25	1.5	11	1.6	4.7	6.4	8.1
Benzo (g,h,i) perylene	NS	NS	NS	ppm	2.4	11	35	18	16 J	24	26 J
TOTAL PAHs				ppm	102.35	897.5	1255	622.6	445.7	728.4	861.1

ND - Compound not detected. | 190 | - Indicates that concentration exceeds the NJDEP Residential Soil Cleanup Criteria.

June 22, 1998
Eight soil samples were collected in June 1998 from the warehouse loading bay area. The data results are shown in the table below (PAP-00009098).

Sample Location:	NJDEP 1996 REVISED SOIL CLEANUP CRITERIA				WH-12R	WH-15	WH-16	WH-17	WH-18	WH-19	WH-20	WH-21
Sample Depth (ft):					0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Langan Sample Number:					534	529	530	531	532	533	535	536
Laboratory Sample Number:	DIRECT CONTACT		IMPACT		JUN044.D	JUN039.D	JUN040.D	JUN041.D	JUN042.D	JUN043.D	JUN046.D	JUN047.D
Sample Date:	RESIDENT.	NON-RESIDENT.	TO G.W.		6/22/98	6/22/98	6/22/98	6/22/98	6/22/98	6/22/98	6/22/98	6/22/98
Parameters				Units	Q	Q	Q	Q	Q	Q	Q	Q
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)												
Naphthalene	230	4,200	100	ppm	8.1	2.8	4.7	3.1	190	0.68	18	ND
Acenaphthylene	NS	NS	NS	ppm	0.82	0.52	0.59	1.3	2.8	0.42	0.9 J	ND
Acenaphthene	3,400	10,000	100	ppm	15	7.7	11	6	160	2.8	25	1.6
Fluorene	2,300	10,000	100	ppm	13	6.5	9.5	5.2	180	2.3	18	1.1
Phenanthrene	NS	NS	NS	ppm	95	56	72	46	840	21	120	12
Anthracene	10,000	10,000	100	ppm	27	12	18	8.9	210	4.9	31	3
Fluoranthene	2,300	10,000	100	ppm	110	66	79	50	670	30	130	22
Pyrene	1,700	10,000	100	ppm.	76	51	56	38	540	21	85	15
Benzo (a) anthracene	0.9	4	500	ppm	50	30	38	24	330	13	54	9.6
Chrysene	9	40	500	ppm	38	28	29	22	230	12	47	8.7
Benzo (b) fluoranthene	0.9	4	50	ppm	54	34	41	27	320	14	54	8.4
Benzo (k) fluoranthene	0.9	4	500	ppm	14	10	10	12	82	8.3	28	8.5
Benzo (a) pyrene (BaP)	0.66	0.66	100	ppm	38	25	30	21	220	12	44	8.8
Indeno (1,2,3-c,d) pyrene	0.9	4	500	ppm	14	12	14	8.9	92	4.6	15	3.5
Dibenzo (a,h) anthracene	0.66	0.66	100	ppm	6.6	5.5	6.5	3.9	43	0.5	6.8	1.5
Benzo (g,h,i) perylene	NS	NS	NS	ppm	11	11	12	7.8	77	4.2	12	3.1

ND - Compound not detected. | 190 | - Indicates that concentration exceeds the NJDEP Residential Soil Cleanup Criteria.

September 23, 1998
Additional soil samples were collected from the warehouse area: The results are shown in the table below (PAP-00009099).

Sample Location:	NJDEP 1996 REVISED SOIL CLEANUP CRITERIA				WH-28	WH-29	WH-31	WH-31D	WH-32	WH-33	WH-33 DUP	WH-34
Sample Depth (ft):					0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Langan Sample Number:					544	545	547	548	549	550	551	552
Laboratory Sample Number:	DIRECT CONTACT		IMPACT		85785	85786	85788	85789	85790	87769	87770	87771
Sample Date:	RESIDENT.	NON-RESIDENT.	TO G.W.		9/23/98	9/23/98	9/23/98	9/23/98	9/23/98	10/2/98	10/2/98	10/2/98
Parameters				**Units**	Q	Q	Q	Q	Q	Q	Q	Q
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)												
Naphthalene	230	4,200	100	ppm	1.5 J	1.6 J	0.072 J	0.14 J	1.9 J	0.079 J	0.12 J	0.16 J
Acenaphthylene	NS	NS	NS	ppm	0.27 J	0.13 J	0.13 J	0.21 J	0.95 J	0.28 J	0.34 J	0.28 J
Acenaphthene	3,400	10,000	100	ppm	2.4	2.2	0.23 J	0.47 J	5.4	0.23 J	0.24 J	0.34 J
Fluorene	2,300	10,000	100	ppm	2.4	2	0.18 J	0.46 J	5.4	0.24 J	0.27 J	0.35 J
Phenanthrene	NS	NS	NS	ppm	19	17	3.4	5.5	61	2.6	3.1	3.9
Anthracene	10,000	10,000	100	ppm	4.8	4.2	0.53	1.2	11	0.69	0.82	0.84
Fluoranthene	2,300	10,000	100	ppm	21	19	6.6	7.4	68	4.2	5.2	5.6
Pyrene	1,700	10,000	100	ppm	17	15	3.7	6.5	66	3.9	4.8	5.8
Benzo (a) anthracene	0.9	4	500	ppm	8	7.4	2	3.1	27	1.9	2.5	2.8
Chrysene	9	40	500	ppm	8.3	8	2.4	3.8	31	2.6	2.8	3.3
Benzo (b) fluoranthene	0.9	4	50	ppm	8.6	8	3.3	4.1	27	3.6	4.4	3.6
Benzo (k) fluoranthene	0.9	4	500	ppm	3.7	3.8	1.2	1.9	12	1.4	2	1.7
Benzo (a) pyrene (BaP)	0.66	0.66	100	ppm	6.7	6.4	2	3	22	2.1	2.7	2.7
Indeno (1,2,3-c,d) pyrene	0.9	4	500	ppm	3.7	3.6	0.72	2	12	0.69	0.82	1.2
Dibenzo (a,h) anthracene	0.66	0.66	100	ppm	0.85	0.9	0.2	0.44	2.9	0.18	0.2	0.31
Benzo (g,h,i) perylene	NS	NS	NS	ppm	3.4	3.4	0.59	1.8	12	0.55	0.61	1.1
TOTAL PAHs				ppm								

October 12, 1998
PAHs were detected in warehouse area soil samples collected from 0–0.5 ft bgs: WH-33 (25.24 ppm), WH-33 DUP (30.92 ppm), WH-34 (33.98 ppm), WH-35 (33.04 ppm), and WH-36 (9.154 ppm) (PAP-00009075; PAP00009099-100).

October 14, 1998
Additional soil samples were collected on October 14, 1998 (0–0.5 ft bgs) in the warehouse area: WH-38, WH-39, WH-40, and WH-41. Results are presented in the following table (PAP-00009076; PAP-00009100).

Sample Location:	NJDEP 1996 REVISED SOIL CLEANUP CRITERIA				WH-35	WH-36	WH-38	WH-39	WH-40	WH-41	WH-45	WH-45 DUP
Sample Depth (ft):					0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5
Langan Sample Number:					553	554	556	557	558	559	580	581
Laboratory Sample Number:	DIRECT CONTACT		IMPACT		87772	87773	89921	89922	89923	89924	101325	101326
Sample Date:	RESIDENT.	NON-RESIDENT.	TO G.W.		10/2/98	10/2/98	10/14/98	10/14/98	10/14/98	10/14/98	12/8/98	12/8/98
Parameters				**Units**	Q	Q	Q	Q	Q	Q	Q	Q
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)												
Naphthalene	230	4,200	100	ppm	0.13 J	0.096 J	0.25 J	0.034 J	0.067 J	1.4	0.024 J	0.04 J
Acenaphthylene	NS	NS	NS	ppm	0.12 J	0.063 J	0.16 J	0.14 J	0.16 J	0.11 J	0.14 J	0.15 J
Acenaphthene	3,400	10,000	100	ppm	0.43 J	0.14 J	0.54 J	0.1 J	0.12 J	2.3	0.08 J	0.084 J
Fluorene	2,300	10,000	100	ppm	0.36 J	0.17 J	0.41 J	0.077 J	0.15 J	2.1	0.08 J	0.094 J
Phenanthrene	NS	NS	NS	ppm	3.8	1.4	3.5	1.1	1.2	15.0	0.93	1
Anthracene	10,000	10,000	100	ppm	0.98	0.34 J	0.81 J	0.29 J	0.3 J	4.1	0.22 J	0.25 J
Fluoranthene	2,300	10,000	100	ppm	6.0	1.8	4.9	2.2	1.8	16.0	1.6	1.6
Pyrene	1,700	10,000	100	ppm	5.2	1.3	3.9	2.1	2.1	14.0	1.5	1.6
Benzo (a) anthracene	0.9	4	500	ppm	2.8	0.66	2.2	1.1	1.0	7.7	0.77	0.77
Chrysene	9	40	500	ppm	3.0	0.74	2.4	1.3	1.2	8.1	0.98	1
Benzo (b) fluoranthene	0.9	4	50	ppm	3.4	0.77	2.8	1.8	1.6	7.9	1	1
Benzo (k) fluoranthene	0.9	4	500	ppm	1.3	0.35	1.2	0.7	0.68	3.6	0.46	0.43
Benzo (a) pyrene (BaP)	0.66	0.66	100	ppm	2.6	0.56	1.9	1.1	1.0	6.4	0.8	0.79
Indeno (1,2,3-c,d) pyrene	0.9	4	500	ppm	1.3	0.35	1.3	0.5	0.42	3.4	0.49	0.39
Dibenzo (a,h) anthracene	0.66	0.66	100	ppm	0.32	0.095	0.31	0.11	0.11	0.9	0.13	0.12
Benzo (g,h,i) perylene	NS	NS	NS	ppm	1.3	0.32 J	1.0	0.41 J	0.34 J	3.2	0.45	0.38
TOTAL PAHs				ppm								

ND - Compound not detected

October 29, 1998

Additional warehouse soil sample results are presented below (PAP-00009076; PAP-00009101).

Sample Location:	NJDEP 1996 REVISED SOIL CLEANUP CRITERIA				WH-28	WH-29	WH-29	WH-31	WH-31 DUP	WH-33
Sample Depth (ft):					0.5 - 1.0	0.5 - 1.0	1.0 - 1.5	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0
Langan Sample Number:					569	561	567	565	566	562
Laboratory Sample Number:	DIRECT CONTACT		IMPACT		95375	93182	95373	93186	93187	93183
Sample Date:	RESIDENT.	NON-RESIDENT.	TO G.W.		11/5/98	10/29/98	11/5/98	10/29/98	10/29/98	10/29/98
Parameters				Units	Q		Q		Q	Q
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)										
Naphthalene	230	4,200	100	ppm	ND	0.7 J	0.084 J	ND	ND	0.11 J
Acenaphthylene	NS	NS	NS	ppm	ND	0.023 J	0.017 J	ND	ND	0.21 J
Acenaphthene	3,400	10,000	100	ppm	0.014 J	0.92	0.12 J	ND	0.021 J	0.32 J
Fluorene	2,300	10,000	100	ppm	0.011 J	0.95	0.12 J	ND	0.017 J	0.34 J
Phenanthrene	NS	NS	NS	ppm	0.13 J	5.7	1.1	0.048 J	0.17 J	3.7
Anthracene	10,000	10,000	100	ppm	0.034 J	1.7	0.26 J	ND	0.042 J	0.98
Fluoranthene	2,300	10,000	100	ppm	0.17 J	5.2	1.3	0.082 J	0.27 J	5.0
Pyrene	1,700	10,000	100	ppm	0.13 J	4.2	1	0.084 J	0.22 J	4.4
Benzo (a) anthracene	0.9	4	500	ppm	0.081	2.4	0.58	0.045	0.12	2.6
Chrysene	9	40	500	ppm	0.075 J	2.4	0.53	0.051 J	0.12 J	2.9
Benzo (b) fluoranthene	0.9	4	50	ppm	0.079	2.4	0.65	0.049	0.14	3.2
Benzo (k) fluoranthene	0.9	4	500	ppm	0.035 J	1.0	0.27	0.023 J	0.053	1.3
Benzo (a) pyrene (BaP)	0.66	0.66	100	ppm	0.063	1.9	0.5	0.035 J	0.1	2.4
Indeno (1,2,3-c,d) pyrene	0.9	4	500	ppm	0.04	1.0	0.28	0.024 J	0.066	1.3
Dibenzo (a,h) anthracene	0.66	0.66	100	ppm	ND	0.29	0.083	0.0078 J	0.018 J	0.35
Benzo (g,h,i) perylene	NS	NS	NS	ppm	0.038 J	1.0	0.27 J	0.025 J	0.07 J	1.2

November 1999

According to a Memorandum from Christine Lacy, Technical Coordinator-NJDEP, dated June 2000, two soil samples (WH-46 and 47) were collected from the site perimeter area. The results reported the presence of carcinogenic PAHs at concentrations ranging from 0.7 to 1.4 ppm at both sample locations (PAS-00102612; PAP-00466460).

The same NJDEP Memorandum noted that PAHs continued to remain a concern at the facility. It was concluded that the PAHs were believed to be the result of historic urban and industrial fill materials. There was no knowledge of site activities being conducted in the areas where elevated PAHs were detected. Soil impacts remained beneath open, grassy areas and some sidewalks and driveways extending to depths ranging from six inches to 2.5 ft. below grade (PAS-00102612-13).

January 2000

According to the March 6, 2000 Supplemental Remedial Investigation Report / Revised Remedial Action Work Plan Addendum, additional soil samples were collected from the Site Perimeter Area at locations WH-46 and WH-47 in order to complete vertical delineation activities. Samples were collected at depth intervals of 1.0 – 1.5 below grade and 1.5 – 2.0 ft below grade from each location. No visible evidence of contamination was observed during collection of the samples and the proposed depth of excavation was modified to 2.5 ft bgs (PAP-00466460, 68). [12]

Results of the laboratory analysis detected the presence of PAHs in four samples, results are presented below (PAP-00466476-7).[12]

[12] This Report was revised to include documents received on May 18, 2020. The additional documents did not change Arkema, Inc.'s previous certification.

SUMMARY OF SOIL SAMPLING ANALYTICAL RESULTS
January 2000

	UNIT	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non-Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	Matrix:	SOIL				
					Date:	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00
					Sample ID:	001	002	003	004	005
					Location:	WH-47	WH-47	WH-46	WH-46	WH-48
					Depth:	1-1.5'	1.5-2'	1-1.5'	1.5-2'	0-0.5'
					Lab ID:	177738	177739	177740	177741	177742
SEMIVOLATILE COMPOUNDS (GC/MS)										
Naphthalene	mg/kg	230	4,200	100		ND	ND	0.022J	0.02J	5.4
Acenaphthylene	mg/kg	NS	NS	NS		0.34J	0.25J	0.076J	0.12J	0.51J
Acenaphthene	mg/kg	3,400	10,000	100		0.14J	0.096J	0.12J	0.089J	8.2
Fluorene	mg/kg	2,300	10,000	100		0.17J	0.089J	0.11J	0.084J	5.2
Phenanthrene	mg/kg	NS	NS	NS		1.9J	1.1J	1.4	1.1	39.0
Anthracene	mg/kg	10,000	10,000	100		1.3J	0.64J	0.38	0.31J	10
Fluoranthene	mg/kg	2,300	10,000	100		28	11	2.2	2.4	41
Pyrene	mg/kg	1,700	10,000	100		29	12.0	1.8	2.1	35
Benzo(a)anthracene	mg/kg	0.9	4	500		**18**	**6.7**	**0.99**	**1.1**	**18**
Chrysene	mg/kg	9	40	500		**16**	6.6	1.0	1.1	**18**
Benzo(b)fluoranthene	mg/kg	0.9	4	50		**23**	**8.6**	**1.2**	**1.2**	**21**
Benzo(k)fluoranthene	mg/kg	0.9	4	500		**9.2**	**3.5**	0.5	0.54	**9.1**
Benzo(a)pyrene	mg/kg	0.66	0.66	100		**19**	**6.9**	**0.87**	**0.94**	**16**
Indeno(1,2,3-cd)pyrene	mg/kg	0.9	4	500		**11**	**3.8**	0.5	0.54	**8.3**
Dibenzo(a,h)anthracene	mg/kg	0.66	0.66	100		**3**	**1**	0.13	0.14	**2.2**
Benzo(g,h,i)perylene	mg/kg	NS	NS	NS		8.9	3.2	0.34J	0.46	7
Total Semi-Volatile Organic Compounds	mg/kg	NS	NS	NS		165.1	63.3	10.92	11.62	243.4

	UNIT	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non-Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	Matrix:	SOIL				
					Date:	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00
					Sample ID:	006	007	008	009	010
					Location:	WH-48	WH-49	WH-49	WH-52	WH-51
					Depth:	0.5-1'	0-0.5'	0.5-1'	1-1.5'	0.5-1'
					Lab ID:	177743	177744	177745	177746	177747
SEMIVOLATILE COMPOUNDS (GC/MS)										
Naphthalene	mg/kg	230	4,200	100		3.9	4	ND	0.092	1.5
Acenaphthylene	mg/kg	NS	NS	NS		0.63J	0.19J	ND	0.073	0.24
Acenaphthene	mg/kg	3,400	10,000	100		5.6	3.2	ND	0.36	3.8
Fluorene	mg/kg	2,300	10,000	100		4.9	3.4	ND	0.28	3.6
Phenanthrene	mg/kg	NS	NS	NS		46	28	0.0092J	2.8	32.0
Anthracene	mg/kg	10,000	10,000	100		11	5.4	ND	0.67	8.1
Fluoranthene	mg/kg	2,300	10,000	100		46	21	0.027J	3.9	35
Pyrene	mg/kg	1,700	10,000	100		39	17.0	0.025J	3.1	29
Benzo(a)anthracene	mg/kg	0.9	4	500		**21**	**7.4**	0.024J	**1.8**	**16**
Chrysene	mg/kg	9	40	500		**22**	8.3	0.018J	1.9	**16**
Benzo(b)fluoranthene	mg/kg	0.9	4	50		**25**	**9.4**	0.024J	**2.2**	**18**
Benzo(k)fluoranthene	mg/kg	0.9	4	500		**10**	**3.8**	ND	0.86	**8.1**
Benzo(a)pyrene	mg/kg	0.66	0.66	100		**18**	**5.9**	ND	**1.6**	**14**
Indeno(1,2,3-cd)pyrene	mg/kg	0.9	4	500		**7.7**	**3.3**	ND	**1.1**	**7.6**
Dibenzo(a,h)anthracene	mg/kg	0.66	0.66	100		**2.1**	**0.95**	ND	0.28	**2**
Benzo(g,h,i)perylene	mg/kg	NS	NS	NS		5.7	2.6	ND	0.92	6
Total Semi-Volatile Organic Compounds	mg/kg	NS	NS	NS		267.9	123.65	0	21.13	191.8

	UNIT	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non-Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	Matrix:	SOIL				
					Date:	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00
					Sample ID:	011	012	013	014	015
					Location:	WH-53	WH-54	WH-55	WH-55 dup	WH-57
					Depth:	0.5-1'	0-0.5'	0.5-1'	0.5-1'	0.5-1'
					Lab ID:	177748	177749	177750	177751	177752
SEMIVOLATILE COMPOUNDS (GC/MS)										
Naphthalene	mg/kg	230	4,200	100		ND	2.9J	0.41J	0.29J	ND
Acenaphthylene	mg/kg	NS	NS	NS		ND	0.2J	0.07J	0.067J	0.048J
Acenaphthene	mg/kg	3,400	10,000	100		ND	5.4	0.75J	0.6J	0.078J
Fluorene	mg/kg	2,300	10,000	100		ND	4.8	0.72J	0.58J	0.054J
Phenanthrene	mg/kg	NS	NS	NS		0.012J	36	6.4	5.6	0.7
Anthracene	mg/kg	10,000	10,000	100		ND	9.2	1.5	1.2	0.15J
Fluoranthene	mg/kg	2,300	10,000	100		0.025J	38	7.7	7	1.1
Pyrene	mg/kg	1,700	10,000	100		0.021J	32.0	5.7	5.5	0.96
Benzo(a)anthracene	mg/kg	0.9	4	500		0.02J	**16**	**3.5**	**3.2**	0.5
Chrysene	mg/kg	9	40	500		0.014J	**18**	3.5	3.4	0.6
Benzo(b)fluoranthene	mg/kg	0.9	4	50		0.02J	**20**	**4.1**	**3.8**	0.66
Benzo(k)fluoranthene	mg/kg	0.9	4	500		0.0089J	**8.2**	**1.7**	**1.5**	0.22
Benzo(a)pyrene	mg/kg	0.66	0.66	100		0.013J	**15**	**3**	**2.8**	0.47
Indeno(1,2,3-cd)pyrene	mg/kg	0.9	4	500		0.012J	**7.6**	**1.9**	**1.8**	0.3
Dibenzo(a,h)anthracene	mg/kg	0.66	0.66	100		ND	**2**	0.52	0.5	0.083
Benzo(g,h,i)perylene	mg/kg	NS	NS	NS		0.011J	6.2	1.5	1.5	0.3J
Total Semi-Volatile Organic Compounds	mg/kg	NS	NS	NS		0	218.4	41.02	37.8	5.633

	UNIT	NJDEP Residential Direct Contact Soil Cleanup Criteria	NJDEP Non-Residential Direct Contact Soil Cleanup Criteria	NJDEP Impact to Groundwater Soil Cleanup Criteria	Matrix:	SOIL				
					Date:	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00	4-Jan-00
					Sample ID:	016	017	018	019	020
					Location:	WH-56	WH-59	WH-58	WH-60	WH-50
					Depth:	0.5-1'	0.5-1'	0.5-1'	0.5-1'	1-1.5'
					Lab ID:	177753	177754	177755	177756	177757
SEMIVOLATILE COMPOUNDS (GC/MS)										
Naphthalene	mg/kg	230	4,200	100		0.27J	ND	0.15J	0.059J	ND
Acenaphthylene	mg/kg	NS	NS	NS		0.45J	0.019J	0.13J	0.64	ND
Acenaphthene	mg/kg	3,400	10,000	100		0.55J	0.016J	0.48	0.092J	ND
Fluorene	mg/kg	2,300	10,000	100		0.56J	0.012J	0.32J	0.13J	ND
Phenanthrene	mg/kg	NS	NS	NS		5.8	0.16J	3.0	1.2	ND
Anthracene	mg/kg	10,000	10,000	100		1.4	0.037J	0.76	0.55	ND
Fluoranthene	mg/kg	2,300	10,000	100		7.8	0.32J	4	3.1	ND
Pyrene	mg/kg	1,700	10,000	100		6.7	0.28J	3.3	3.2	ND
Benzo(a)anthracene	mg/kg	0.9	4	500		**3.5**	0.16	**1.8**	**1.9**	ND
Chrysene	mg/kg	9	40	500		4	0.17J	2.1	2.1	ND
Benzo(b)fluoranthene	mg/kg	0.9	4	50		**4.8**	0.21	**2.4**	**2.9**	ND
Benzo(k)fluoranthene	mg/kg	0.9	4	500		**1.9**	0.085	**1**	**1.3**	ND
Benzo(a)pyrene	mg/kg	0.66	0.66	100		**3.5**	0.2	**1.7**	**2.1**	ND
Indeno(1,2,3-cd)pyrene	mg/kg	0.9	4	500		**1.8**	0.11	**0.92**	0.9	ND
Dibenzo(a,h)anthracene	mg/kg	0.66	0.66	100		0.51	0.034J	0.25	0.27	ND
Benzo(g,h,i)perylene	mg/kg	NS	NS	NS		1.4	0.12J	0.74	0.68	ND
Total Semi-Volatile Organic Compounds	mg/kg	NS	NS	NS		43.11	0.725	22.45	20.84	0

Qualifiers:
ND - Compound not detected, MDL below lowest SCC.
NS - No standard for this compound.
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concetration given is an approximate value.

39 Concentration exceeds the most stringent criteria

Response Actions

Impacted soil associated with the warehouse loading bay AOC was remediated. Additional delineation in this area identified that remaining PAHs did not originate from the warehouse loading bay and were not associated with any on-site source associated with site operations (PAS-00102558).

According the *Remedial Action Report* dated March 20, 2002, all soils impacted in the site perimeter area (plating room condensate drain, warehouse loading bay) were removed, and engineering and institutional controls at four remaining AOCs (boiler room area, North Yard area, hydraulic lift area, and former gasoline piping area) were to be implemented to prevent inadvertent contact with soils impacted by PAHs (PAP-00009178; PAP-00009196; PAP-00009330; PAS-00102613). A deed notice was filed on November 12, 2002 (PAP-00009346). The NJDEP issued a site-wide conditional No Further Action Letter (NFA) on December 18, 2002. The terms of the NFA included the filing of the deed notice for the four remaining AOCs with soils impacted by PAHs (boiler room area, North Yard area, hydraulic lift area, perimeter area and the former gasoline piping area (PAP-00009345).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file materials.

ASHLAND LLC

Facility Name, Address and Size: Ashland LLC/Ashland Chemical Company/Ashland Oil, Inc.; 221 Foundry Street, Newark, New Jersey; 11 acres; 18 employees (PAP-00089182).

1. **Business Type:** Industrial solvent and chemical repackaging and distribution (PAP-00089139).

2. **Time Period of Ownership/Operations**

   Operator: 1968 to 1992
   Owner: 1968 to 2003

   1968: Ashland Oil, Inc. acquired the property from Lasp Realty, Inc., in June 1968 (PAP-00089138; PAS-00050517).

   1991: Operations at the facility ceased in 1991 when the New Jersey Turnpike Authority notified Ashland Oil, Inc., of plans to widen the highway which would involve construction on Ashland Oil, Inc.'s property (PAP-00090522).

   1992: All facility buildings, process lines, and storage tanks, as well as on-site railroad sidings, were dismantled and removed from the site in 1992 (PAP-00090523).

   1995: Ashland Oil, Inc. changed its name to Ashland, Inc. in 1995 (PAS-00050518). Ashland Chemical Company is a division of Ashland, Inc. (PAS-00050518).

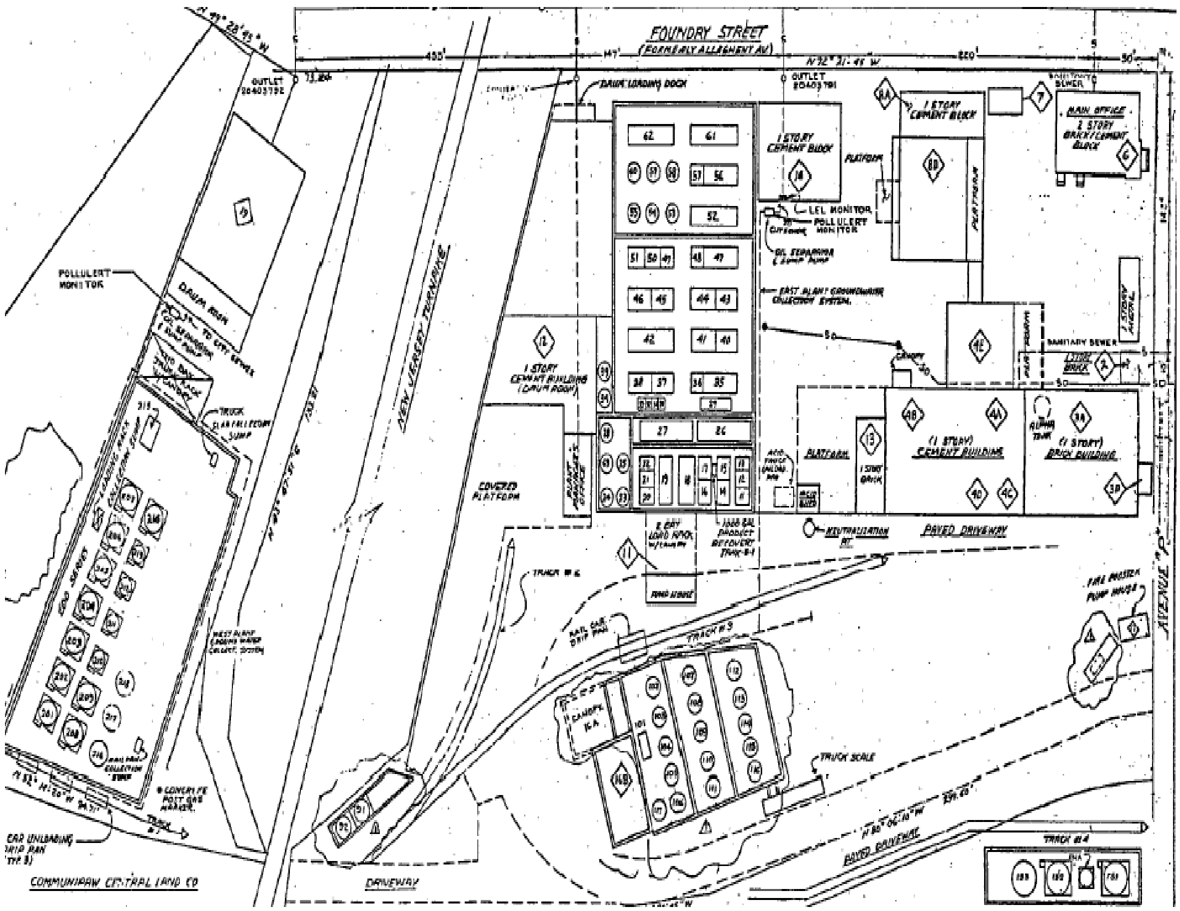
   2003: Foundry Street Development LLC acquired the property in 2003 (PAS-00000057).

3. **Operational History/COC Use and Presence at the Facility**

   According to a memorandum prepared by the New Jersey Department of Environmental Protection (NJDEP) dated April 3, 1991, the facility received bulk shipments of aliphatic and aromatic hydrocarbons, acids, alcohols, alkines, amines, esters, ethers, glycols, halogenated solvents, ketones, and nitro paraffins by rail car and tank truck. Upon receipt, the chemicals were transferred into a series of aboveground tank farms throughout the property. The chemicals were then repackaged into smaller bulk lots, such as bags, drums, and other containers for distribution to customers. No products were manufactured onsite using the received chemicals; however, a few special blends (solvent mixtures) were processed. Facility operations generated waste oils from the oil-water separator, spill cleanup material, and hose residue (PAP-00089139). According to a Storage Tanks and Product Inventory table in an *ECRA Sampling Plan*, dated July 6, 1988, at least 26 storage tanks containing petroleum distillate were listed as being present at the site ranging in capacity from 1,000 gallons to 30,000 gallons (PAP-00090204-06).

According to an undated *Documents Illustrating Nexus Between Ashland Chemical Company and Conditions in the Six Mile Study Area*, prepared by Maxus Energy Corporation on behalf of Occidental Chemical Corporation, OU2 contaminants of concern (COCs) stored and handled at the facility site included copper cyanide (PAP-00089119).

A facility layout is depicted below (PAP-00090201):



Monsanto sales records show the following sales of polychlorinated biphenyls (PCBs) to “Ashland Chemical Co Div.” in December 1968 (PAP-00207333; PAP-00207193):

- 3,000 pounds of Aroclor 1248
- 1,200 pounds of Aroclor 1242

However, the location of the facility receiving the PCB shipments is not identified in the Monsanto sales records nor by a review of available facility documents. Therefore, it is unclear if the shipment pertained to the Newark facility, and PCBs are not discussed further herein.

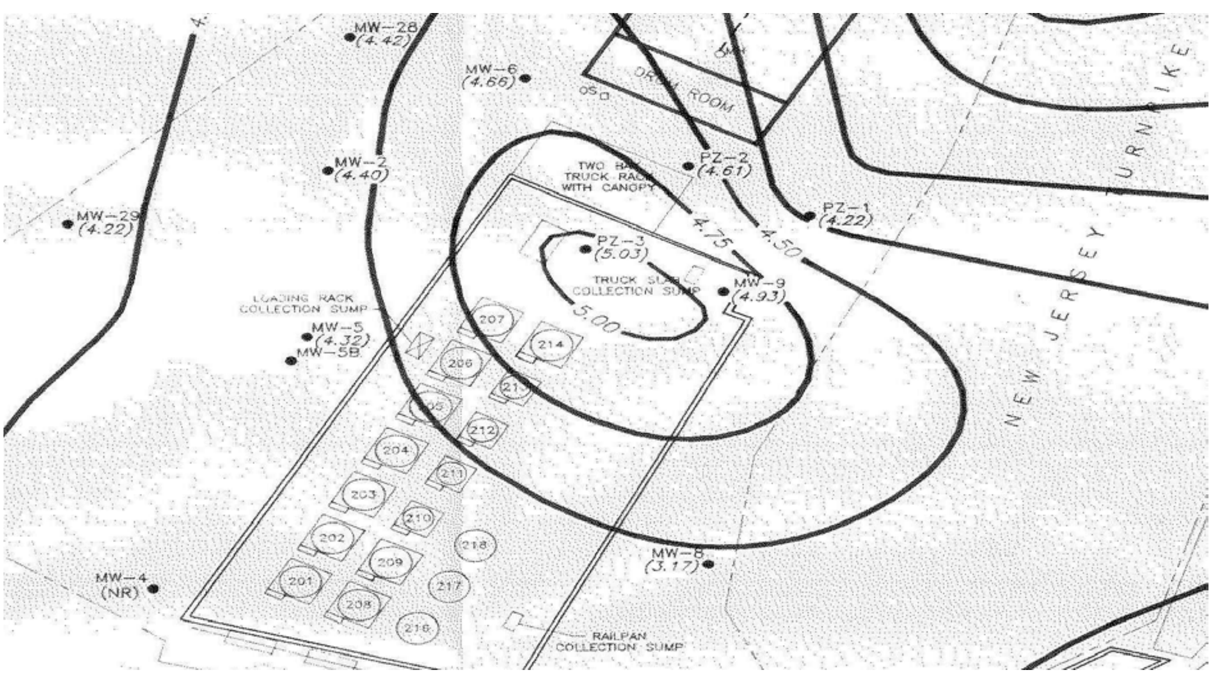
4. Identified COCs

- PAHs (stored, used, detected)
- Copper (stored, handled, detected)
- Mercury (detected)
- Lead (detected)

PAHs

According to a memorandum prepared by NJDEP dated April 3, 1991, the facility received bulk shipments of aliphatic and aromatic hydrocarbons. Upon receipt, the chemicals were transferred into a series of aboveground tank farms throughout the property. The chemicals were then repackaged into smaller bulk lots, such as bags, drums, and other containers for distribution to customers (PAP-0089139). A Storage Tanks and Product Inventory table included in an *ECRA Sampling Plan*, dated July 6, 1988, states that at least 26 storage tanks containing petroleum distillate were listed as being present at the site ranging in capacity from 1,000 gallons to 30,000 gallons (PAP-00090204-06). Petroleum distillate may contain PAHs.

According to a *Report of Findings, Soil and Groundwater Investigation*, dated December 15, 1992, in 1992, test pits were excavated around an area of “separate phase hydrocarbons” identified in two groundwater monitoring wells (MW-4 and MW-9). A black, viscous product resembling old asphalt was identified in five test pits, and a black, consolidated, hard, asphalt-like substance was identified in two test pits (PAP-00089971). A sample of the fill containing the black, asphalt-like material was collected (PAP-00089972). Low molecular weight PAHs were identified in the samples collected from two to 2.5 feet below ground surface (bgs) (PAP-00089995). The location of MW-4 and MW-9 (located at the west end of the facility, adjacent to a tank farm, west of the New Jersey Turnpike) is depicted below (PAP-00090008):



According to a *Report of Site Activities*, dated January 26, 2001, high and low molecular weight PAHs were identified in site soil in 21 of 37 areas of concern (AOCs) in 1999 (PAP-00089727-41). A figure depicting these AOCs is presented in Section 7 below.

Copper

As stated previously, according to an undated *Documents Illustrating Nexus Between Ashland Chemical Company and Conditions in the Six Mile Study Area*, prepared by Maxus Energy Corporation on behalf of Occidental Chemical Corporation, copper cyanide was stored and handled at the facility site (PAP-00089119).

According to a *Report of Findings, Soil and Groundwater Investigation*, dated December 15, 1992, in 1992, test pits were excavated around an area of "separate phase hydrocarbons" identified in two groundwater monitoring wells (MW-4 and MW-9). A black, viscous product resembling old asphalt was identified in five test pits, and a black, consolidated, hard, asphalt-like substance was identified in two test pits (PAP-00089971). A sample of the fill containing the black, asphalt-like material was collected (PAP-00089972). Copper was detected at a concentration of 19 ppm in one soil sample collected from a depth of two to 2.5 feet bgs (PAP-00089995). The report states that based on the physical characteristics and the analytical results from the sample, it appeared that the fill material in the area around the sample location contained a layer of degraded asphalt, and that this material was not believed to be related to site activities (distribution and re-packaging of solvents and chemicals) but rather to the fill material used to regrade this area of Newark. Therefore, no further action was proposed to address this material (PAP-00089980).

Lead

According to a *Report of Findings, Soil and Groundwater Investigation*, dated December 15, 1992, in 1992, test pits were excavated around an area of "separate phase hydrocarbons" identified in two groundwater monitoring wells (MW-4 and MW-9). A black, viscous product resembling old asphalt was identified in five test pits, and a black, consolidated, hard, asphalt-like substance was identified in two test pits (PAP-00089971). A sample of the fill containing the black, asphalt-like material was collected (PAP-00089972). Lead was detected at a concentration of 84 ppm in one soil sample collected from a depth of two to 2.5 feet bgs (PAP-00089995). The report states that based on the physical characteristics and the analytical results from the sample, it appeared that the fill material in the area around the sample location contained a layer of degraded asphalt, and that this material was not believed to be related to site activities (distribution and re-packaging of solvents and chemicals) but rather to the fill material used to regrade this area of Newark. Therefore, no further action was proposed to address this material (PAP-00089980).

Mercury

According to a *Report of Findings, Soil and Groundwater Investigation*, dated December 15, 1992, in 1992, test pits were excavated around an area of "separate phase hydrocarbons" identified in two groundwater monitoring wells (MW-4 and MW-9). A

black, viscous product resembling old asphalt was identified in five test pits, and a black, consolidated, hard, asphalt-like substance was identified in two test pits (PAP-00089971). A sample of the fill containing the black, asphalt-like material was collected (PAP-00089972). Mercury was detected at a concentration of 0.29 parts per million (ppm) in one soil sample collected from a depth of two to 2.5 feet bgs (PAP-00089995). The report states that based on the physical characteristics and the analytical results from the sample, it appeared that the fill material in the area around the sample location contained a layer of degraded asphalt, and that this material was not believed to be related to site activities (distribution and re-packaging of solvents and chemicals) but rather to the fill material used to regrade this area of Newark. Therefore, no further action was proposed to address this material (PAP-00089980).

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

While the Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP, according to a *Report of Site Activities*, dated January 26, 2001, existing data show that the site is underlain by about five to eight feet of fill consisting of miscellaneous silt, sand and gravel with brick fragments, cinders and wood (PAP-00089700). The facility location was originally tidal marshland and was the location of extensive filling to allow development of the property. Initial filling began in the early 1900s (PAP-00089172).

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[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00089727-41; PAP-00089980).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	84 mg/kg
Copper	19 mg/kg
Mercury	0.29 mg/kg
Benzo(a)anthracene	49 mg/kg
Benzo(a)pyrene	52 mg/kg
Benzo(b)fluoranthene	66 mg/kg
Benzo(k)fluoranthene	12 mg/kg
Dibenzo(a,h)anthracene	6.9 mg/kg
Indeno(1,2,3-cd)pyrene	30 mg/kg

5. COC Pathways

According to a *Spill Prevention Control and Countermeasure Plan*, dated October 24, 1983, the entire plant site is located in natural low area with almost no slope within the plant. On the south side of the property a 20-foot-high dirt embankment used as a railroad roadbed acts as a drainage barrier. The New Jersey turnpike runs roughly north/south through the center of the property and prevents any flow-through except at Foundry Street at the north end of the property and a railroad underpass at the south end of the property. In the event of a very large spill, some material might reach Foundry Street and flow to the corner of P Avenue where the lowest elevations near the plant occur. City storm sewers exist on the northwest side of the turnpike embankment and in P Avenue on the southeast side of the plant (PAS-00050565).

The Passaic River is located approximately 2,000 feet east of the site (PAP-00089321).

Sanitary and Storm Sewer

According to a memorandum prepared by NJDEP dated April 3, 1991, the site is part of the Foundry Street Complex. Approximately 30 buildings were situated throughout the complex, separated by narrow driveways which had strip-like drains in the middle of the lane. The drains were connected to an industrial sewer line on Roanoke Avenue and received surface water run-off and industrial discharge from companies in the complex. According to PVSC Annual Reports the Roanoke Avenue sewer connects to a sewer on Doremus Avenue, which flows to the PVSC treatment works. There is a combined sewer overflow (CSO) outfall to the Passaic River at the foot of Roanoke Avenue (approximately River Mile 1.1). In 1969, the City of Newark constructed a dam near this CSO to increase flow to the Doremus Avenue sewer, and ultimately, the PVSC treatment works (PAS-00044625-626). It is reported that the Roanoke Avenue combined sewer system and outfall to the Passaic River was documented by PVSC to have been inoperative from 1971 through late 1979, and that discharges of hazardous substances into the sewer system of the Foundry Street Complex would have ultimately discharged directly to the Passaic River via the Roanoke Avenue CSO during periods

when it was known to be in a chronic malfunctioning condition (PAS-00109572; PAS-00114295; PAS-00114311; PAS-00114320), (PAP-00089131).

According to a NJDEP Site Evaluation Submission, dated July 1, 1988, three wastewater streams were historically discharged to the Passaic Valley Sewerage Commission (PVSC) system:

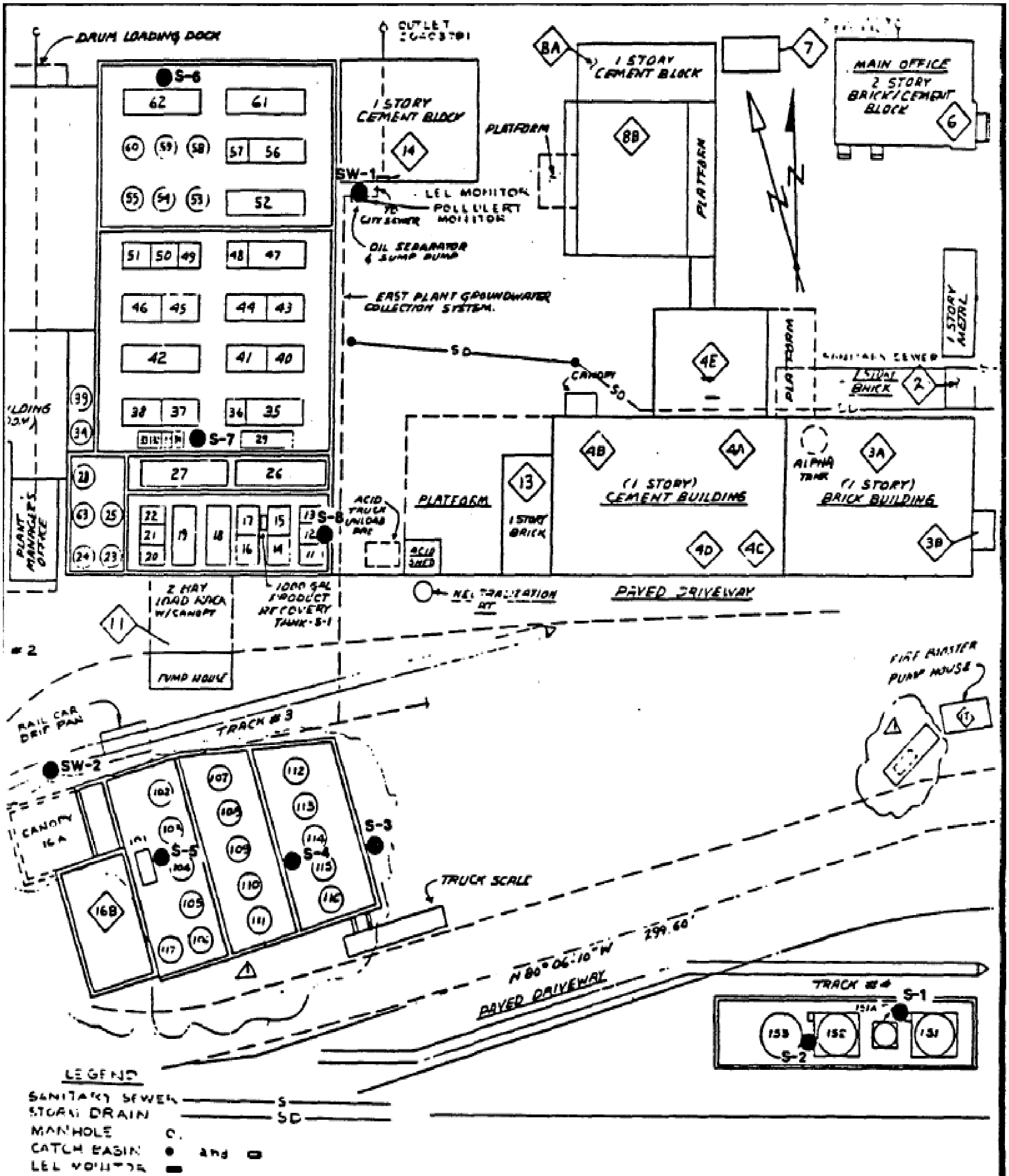
- Sanitary sewage from 1940 to at least 1988 (based on the date of the referenced report, which identifies the end date as “present”);

- Groundwater (associated with a groundwater recovery system) collected in sumps and treated via oil/water separator prior to discharge from 1979 to at least 1988 (based on the date of the referenced report, which identifies the end date as “present”); and,

- Neutralized drum wash water from 1981 to 1987 (PAP-00088766; PAP-00089938). According to a letter prepared by Ashland, dated January 14, 1988, drum wash water resulted from washing of drums that previously contained acids and caustics (PAS-00050521).

According to a letter from Ashland to PVSC, dated October 2, 1986, discharge to the sewer system was approximately 2,300 gallons per day. The sanitary sewer outlets accounted for 2,000 gallons per day. The balance of the discharge was from the two groundwater monitoring wells and the neutralization pit (PAP-00089938). Permitted wastewater discharges were not required to be monitored for OU2 COCs (PAP-00089944-45).

A figure that identifies the location of facility sanitary and storm drains is depicted below (PAP-00089285):



Note that the figure above appears to depict the eastern half of the site only; a figure depicting facility sanitary and storm drains on the western half of the site was not identified in the available file material.

Direct Release

According to a letter prepared by NJDEP, dated May 30, 1990, the facility had a New Jersey Pollutant Discharge Elimination System (NJPDES) permit (No. NJ0076651) for surface water discharge (PAS-00051046). However, no information regarding the nature or quantity of direct discharges to the Passaic River was available in the documents reviewed.

Spills

According to a memorandum prepared by NJDEP dated April 3, 1991, on March 7, 1979, a spill of No. 4 fuel oil occurred, but was contained within diking. Approximately 18,000 gallons of waste solvents and fuel oil were removed. Subsequently, a groundwater recovery system, consisting of three trenches was installed around the tank farm. Inspections conducted by NJDEP personnel on March 13 and 28, 1979, noted that the groundwater recovery system had been infiltrated with oil and solvents. In addition, spillage and/or leakage also was documented throughout Ashland's facility by representatives of the NJDEP. Areas noted included the following: all tank farms, loading/unloading manifolds, pipe connections, sumps, and the storm sewer system. According to NJDEP, corrective measures were discussed with Ashland's officials who stated that it would not be economically feasible for the company to implement all of the remedies required by NJDEP (PAP-00089139-40; PAP-00089932). Sampling data for OU2 COCs related to the referenced spills was not identified in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

According to a PVSC *Annual Report*, on May 17, 1971, Inspector J. McLaughlin sampled washings from Ashland, entering into the Roanoke Avenue Storm Sewer at Avenue P. Analysis of this sample stated it was "not only highly polluting," but contained flammable and explosive materials. The company was notified on May 26, 1971, to cease pollution at once, and warned against discharge to the sanitary sewer without proper pretreatment. Ashland replied on May 28, 1971, informing PVSC that plans to permanently correct this situation were in development and would be sent to the PVSC within two weeks. In the interim, Ashland would catch their liquid waste and have it disposed off-site (PAP-00089153). According to the *Annual Report,* subsequent samples were "bad." Ashland stated that the objectionable samples were due to truck washing activities. Ashland met with PSVC to submit plans to install an oil/water separator on site (PAP-00089154).

According to a June 15, 1976, letter prepared by PVSC, on May 6, 1976, a PVSC inspector found personnel pumping material out of a catch basin on Avenue P, which flowed into the Roanoke Avenue storm sewer, and then to the Passaic River. A sample collected by PVSC was determined to be highly flammable and potentially explosive. According to the letter, it appeared that the material came from the tank truck wash area

where tank trucks were brought for steam cleaning. Spills occurred when drivers disconnected hoses that had been connected from the steam cleaning equipment to the truck. This material then flowed into the catch basin and thereafter the Roanoke Avenue storm sewer (PAP-00089155). Sampling data for OU2 COCs related to the referenced spills was not identified in the available file material.

Violations / Enforcement Actions

The facility received a notice of violation from PVSC on August 10, 1990, for failure to maintain continuous monitoring of facility outfalls (PAS-00050635).

Permits

According to a letter prepared by NJDEP, dated May 30, 1990, the facility had a NJPDES permit (No. NJ0076651) for surface water discharge (PAS-00051046). According to a letter prepared by Ashland, dated February 20, 1995, Ashland did not know the years for which it held this permit (PAS-00050508). No information regarding the nature or quantity of discharges to the Passaic River is available from reviewed documents.

According to a letter prepared by Ashland, dated February 20, 1995, the facility discharged to the PVSC sewer system pursuant to a PVSC permit (No. 20402793). According to the letter, Ashland did not know the years for which it held this permit (PAS-00050508). It appears Ashland held the permit beginning prior to 1986, as the permit was renewed in October 1986 (PAP-00089938). Ashland was not required to monitor discharges for OU 2 COCs under this permit (PAP-00089944-45).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- *Report of Findings, Soil and Groundwater Investigation*, dated December 15, 1992 (PAP-00089956);
- *Progress Report*, dated May 11, 1995 (PAP-00089617);
- *Report of Progress and Remedial Action Proposal for Former Ashland Chemical Company IC&S Facility*, dated March 8, 1996 (PAP-00090506);
- *Report of Site Activities*, dated January 26, 2001 (PAP-00089694);
- *Remedial Investigation Report*, dated September 27, 2001 (PAP-00123558).

Sewer

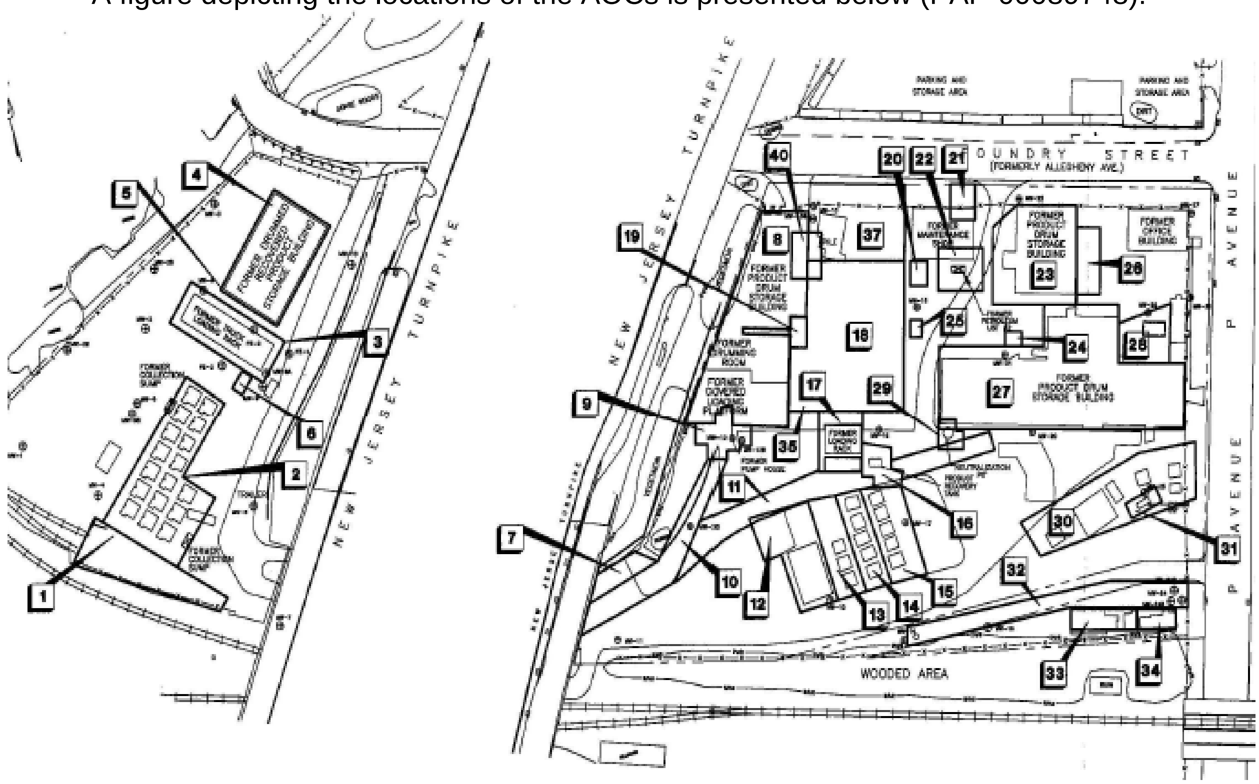
There is no information regarding sewer sampling in the available file material.

Soil

According to a *Report of Findings, Soil and Groundwater Investigation*, dated December 15, 1992, in 1992, test pits were excavated around an area of “separate phase hydrocarbons” identified in two groundwater monitoring wells (MW-4 and MW-9). A black, viscous product resembling old asphalt was identified in five test pits, and a black, consolidated, hard, asphalt-like substance was identified in two test pits (PAP-00089971). A sample of the fill containing the black, asphalt-like material was collected (PAP-00089972). Mercury, copper, and lead were detected at concentrations of 0.29 ppm, 19 ppm, and 84 ppm, respectively, in one soil sample collected from a depth of two to 2.5 feet bgs (PAP-00089995). The report states that based on the physical characteristics and the analytical results from the sample, it appeared that the fill material in the area around the sample location contained a layer of degraded asphalt, and that this material was not believed to be related to site activities (distribution and re-packaging of solvents and chemicals), but rather to the fill material used to regrade this area of Newark. Therefore, no further action was proposed to address this material (PAP-00089980).

According to a *Progress Report*, dated May 11, 1995, in 1994 a total of 250 soil borings were completed at the site. The soil borings were completed to characterize soil quality and delineate the distribution of “organics” in soils at 37 identified AOCs (PAP-00089629). Additional information as to the purpose of the investigation was not identified in the available file material.

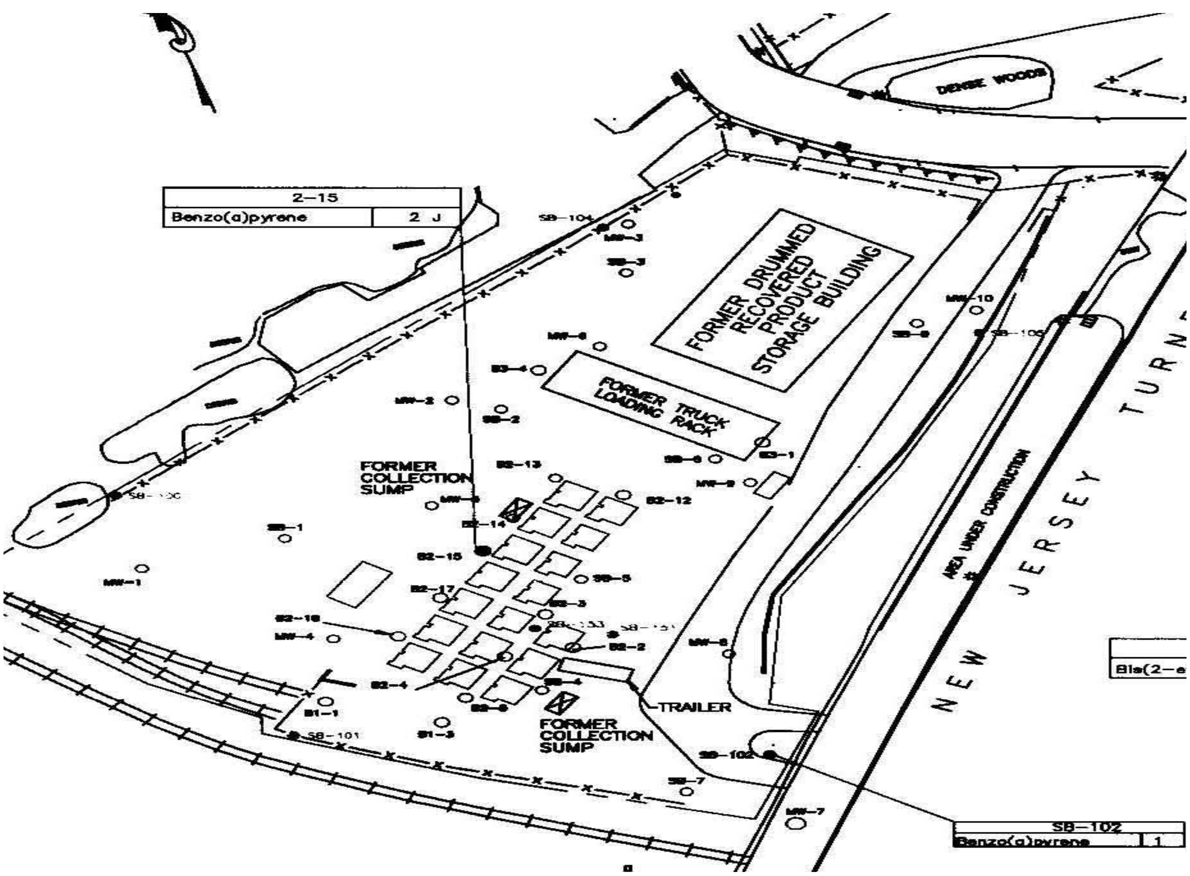
A figure depicting the locations of the AOCs is presented below (PAP-00089748):



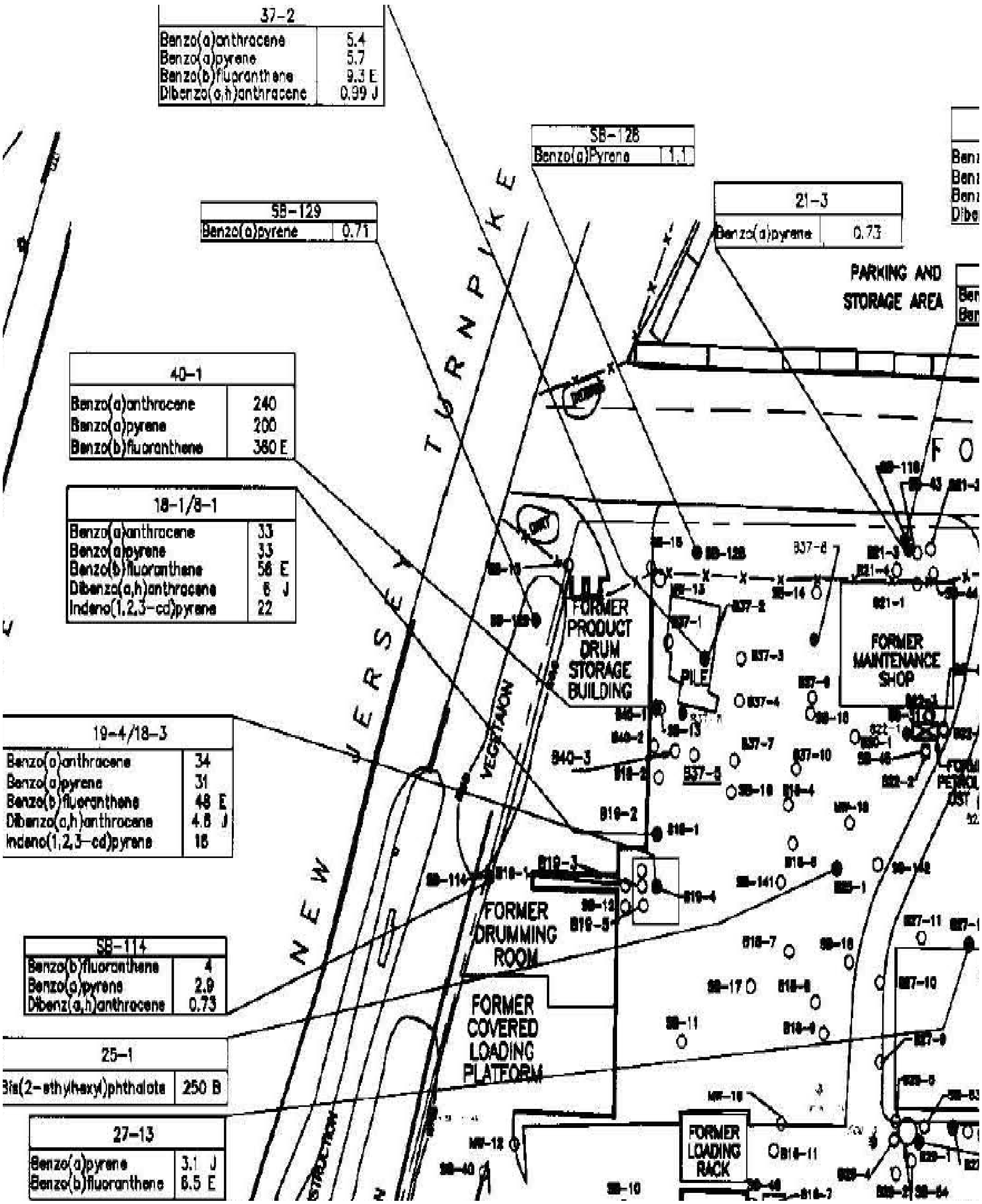
Only total petroleum hydrocarbon data was reported in the *Progress Report*, dated May 11, 1995. No PAH data were identified in the referenced report (PAP-00089629, 32-81); however, further investigation was recommended at 22 AOCs due to the identification of total petroleum hydrocarbons in soil at concentrations greater than 10,000 mg/kg, as "required by the NJDEP" (PAP-00089630, 35, 39, 46, 50, 54, 59, 69, 73, 76). It is noted that no further action was proposed at the following AOCs related to site wastewater/stormwater discharges: West Oil/Water Separator, Central Sanitary Sewer Oil/Water Separator, Central Stormwater Catch Basin, and East Stormwater Catch Basin (PAP-00089638, 63, 64, 65). According to a *Report of Progress and Remedial Action Proposal for Former Ashland Chemical Company IC&S Facility*, dated March 8, 1996, a comprehensive evaluation of soil and groundwater quality data concluded that petroleum residues in soil are not a significant continuing source of groundwater contamination (PAP-00090508).

According to a *Report of Site Activities*, dated January 26, 2001, high and low molecular weight PAHs were identified in site soil in 21 of 37 AOCs in 1999. These are summarized in the figures below (PAP-00089727-41). It is noted that the two site stormwater catch basins were not sampled for PAHs (PAP-00089714).

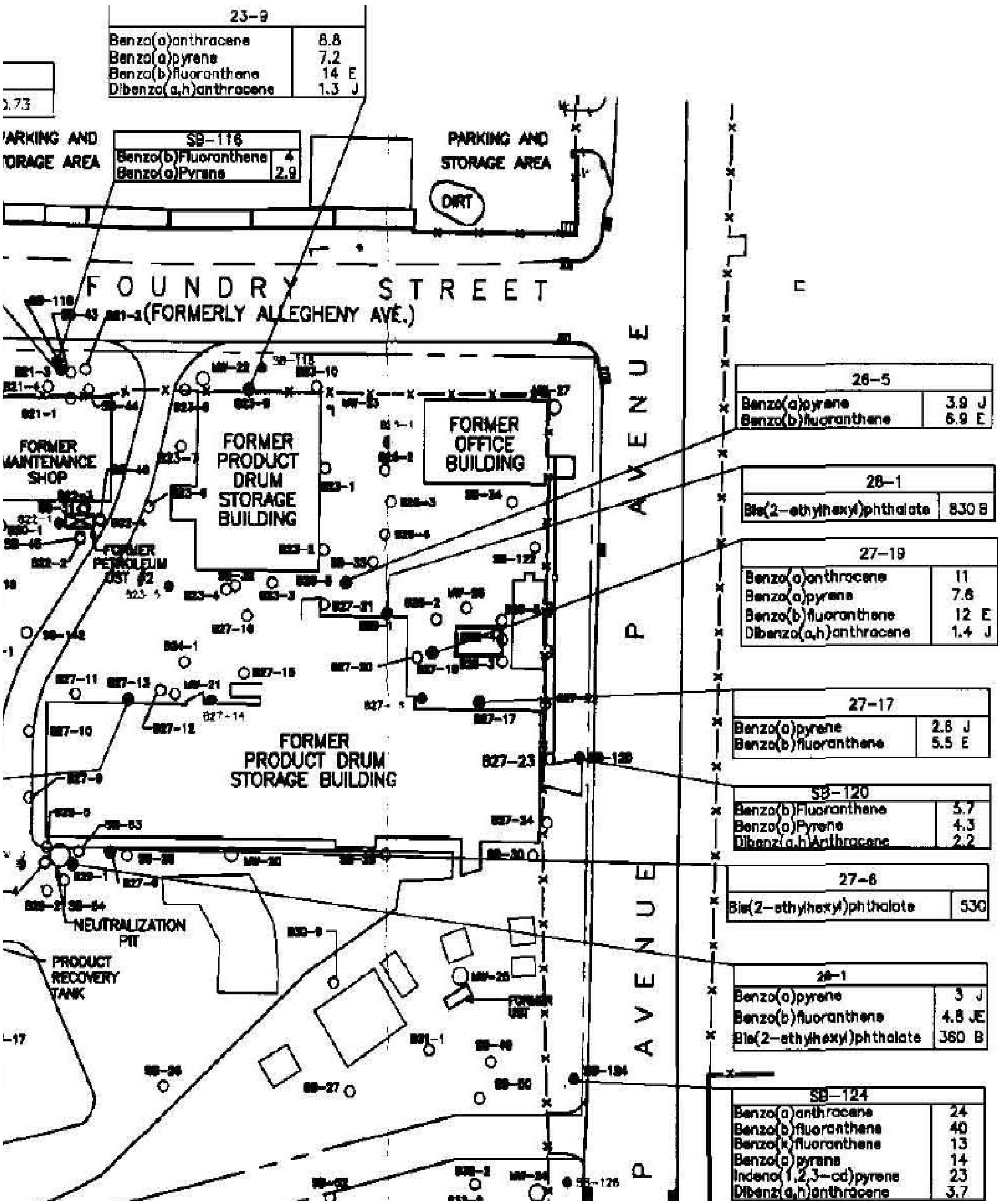
The locations of PAH exceedances in surface soil (zero to two feet bgs) detected in the western third of the site are depicted below (PAP-00089755):



The locations of PAH exceedances in surface soil (zero to two feet bgs) detected in the central third of the site are depicted below (PAP-00089755):



The locations of PAH exceedances in surface soil (zero to two feet bgs) detected in the eastern third of the site are depicted below (PAP-00089755):



Remedial Activities

According to a *Report of Progress and Remedial Action Proposal for Former Ashland Chemical Company IC&S Facility*, dated March 8, 1996, Ashland filed under the NJDEP Environmental Cleanup Responsibility Act in 1988 when the New Jersey Turnpike Authority notified Ashland of plans to widen the highway which would involve construction on Ashland's property. Operations at the facility ceased in 1991, and corrective actions were commenced in 1992 (PAP-00090522). All facility buildings, process lines, and storage tanks, as well as on-site railroad sidings, were dismantled and removed from the site in 1992 (PAP-00090523).

A Cleanup Plan was prepared in 1993, and involved excavation of all soil that contained petroleum hydrocarbons at concentrations greater than 10,000 mg/kg (PAP-00090605). According to a *Report of Progress and Remedial Action Proposal for Former Ashland Chemical Company IC&S Facility*, dated March 8, 1996, quarterly progress reports were submitted to NJDEP for Industrial Site Recovery Act Case Number 88695, as part of the ongoing requirements of the 1993 Cleanup Plan (PAP-00090515).

According to a *Remedial Investigation Report*, dated September 27, 2001, in August 1999, approximately 750 tons of soil containing tar/asphalt were excavated from the Track No. 1 Rail Car Loading Area AOC (i.e., AOC 1, located in the western portion of the site) to a depth of four feet below ground surface (the depth to groundwater). When the western-most portion of the excavation area was excavated, viscous, tar-like material flowed into the excavation along the southern wall at a depth of approximately two to three feet below ground surface. Additional lateral excavation in this area was not possible due to the presence of both a fence and two rail road spurs. Absorbent booms were placed on top of the groundwater to restrict the tar-like material from floating to other portions of the excavation. Sinking materials were confined by the presence of subsurface remains of foundation walls. On October 18 and 19, 1999, the excavated soils were removed from the site for treatment off site. High molecular weight PAHs remained in surface soil (zero to two feet bgs) in this area at concentrations less than the NJDEP "Residential Direct Contact Soil Cleanup Criteria" of 660 micrograms per kilogram (µg/kg) for benzo(a)pyrene and 900 µg/kg for all other PAHs (PAP-00123568, 98). It is noted that the source of the tar-like material is not discussed in the *Remedial Investigation Report*, dated September 27, 2001. According to a 1979 *City of Newark, New Jersey Feasibility Study: Pollution Abatement Program* document, a black, tar-like sediment was found in the Roanoke Avenue sewer. The document states the "source is evidently" the Pitt Consol Chemical Company and that "spillage appears to have contaminated the groundwater." It is unclear if this is also the source of the tar-like material identified in groundwater at the Ashland site.

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

Facility Data Report

ATLANTIC RICHFIELD COMPANY

Facility Name, Address and Size: Getty Newark Terminal; 86 Doremus Avenue, Newark, New Jersey; approximately 14.5 acres (PAS-00004907); the number of employees and shifts is unknown based on review of available file material.

1. **Business Type:** Storage and distribution of petroleum products

2. **Time Period of Ownership/Operations**

   Operator: 1930s to July 23, 1951
   Owner: 1930s to July 23, 1951

   1930s: Atlantic Refining Company owned and operated the facility from sometime in the 1930s until July 23, 1951 (PAP-00189227).

   1951: Atlantic Refining Company conveyed the site to Tide Water Associated Oil Company on July 23, 1951 (PAP-00189227).

3. **Operational History/COC Use and Presence at the Facility**

   A *Preliminary Assessment/Site Investigation Report, Former Getty Terminal 56230*, dated March 2014 (2014 PA/SI), states that historical aerial photographs identified 11 tanks at the site and two docks that appeared to be leading to the Passaic River in 1943 (PAP-00084083). An historical Sanborn Fire Insurance Map dated 1950 identified the following:

   - Seven storage tanks ranging from 220,000 to 845,000 gallons in size surrounded by concrete walls in the area to the east of Doremus Avenue ("East Yard")
   - A garage and repair shop
   - A barrel storage area
   - An oil filling area with two oil tanks
   - A motor oil warehouse
   - A tank car filling area, among other buildings.

   The area to the west of Doremus Avenue ("West Yard") included three additional large storage tanks surrounded by concrete walls, a gasoline pump storage building, and an unlabeled building. Railroad spur lines extend onto both the East Yard and West Yard (PAP-00084085, 166).

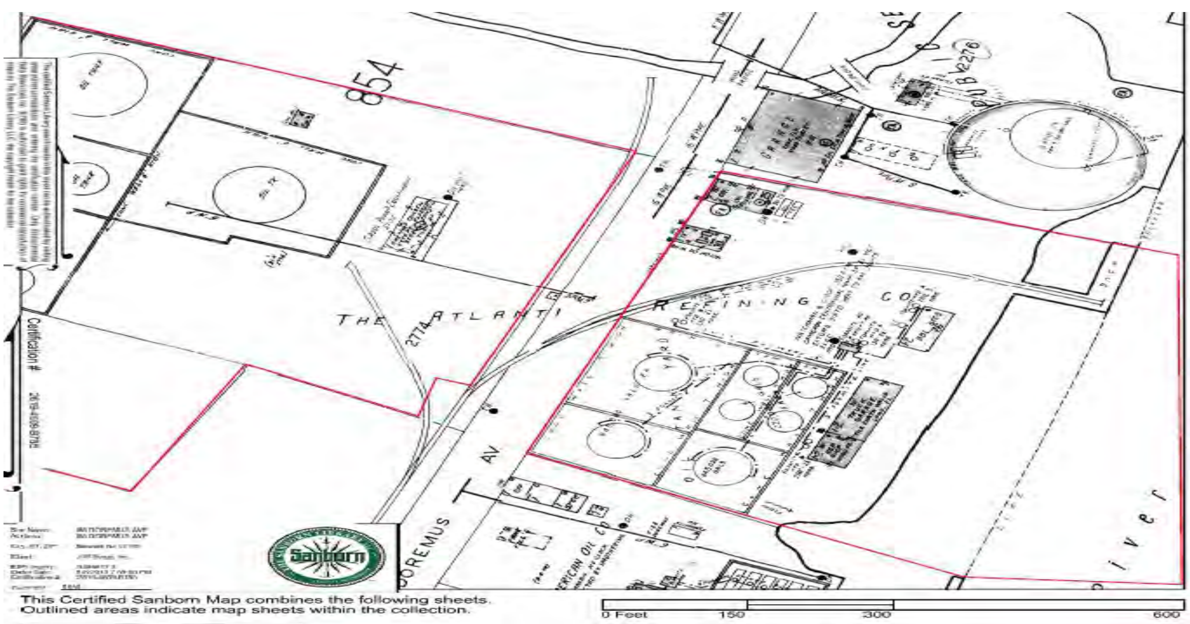
   At the time of Texaco's operation of the facility, as documented in a *Cleanup Plan*, prepared for Texaco, dated October 1989, operations included the following:

   - Petroleum products were received at the terminal primarily via a pipeline system. Occasionally, product was received from barges at a loading dock on the Passaic River and then piped into the proper storage tanks. The petroleum products were

stored in 11 aboveground tanks. Sediments that settled to the bottom of the tanks were removed, containerized and then transported for proper disposal. The petroleum products were dispensed into tank trucks at a loading rack for delivery offsite. This procedure was done via a truck loading rack with seven gasoline loading positions and two distillate loading positions (PAS-00004914).

An aerial photograph of the site in 1943 is depicted below (PAP-00084142):

An historical Sanborn Fire Insurance Map dated 1950 is depicted below (PAP-00084167):



4. Identified COCs

- PCBs (detected)
- PAHs (detected)
- Lead (detected)

No onsite sampling data were available from the time period during which Atlantic Refining Company owned/operated the Terminal. Data were collected from the terminal after Atlantic Refining Company's time, and identified the presence of COCs (lead, PAHs, PCBs) in one or more environmental medium. There are no statements in the available reference material suggesting that these detections are the result of Atlantic Refining Company's operations. These data are discussed further in Section 7 below.

PCBs

No onsite sampling data were available from the time period during which Atlantic Refining Company owned/operated the terminal.

According to a *Remedial Investigation Report*, dated July 2014, review of a 1947 aerial photograph did not identify any noticeable activity at Area A (PAP-00066683). Area A is located south of the West Yard (PAP-00189244). The *Cleanup Plan*, prepared for Texaco, dated October 1989*c*, also states Area A was never used for facility operations (PAS-00004919). It is noted that a letter prepared by the New Jersey Department of Environmental Protection (NJDEP) dated December 6, 1996, states that the "probable source" of PCB contamination in Area A is historic filling. The letter also states that while it is apparent based on historical aerial photographs that Area A was subject to filling, staging of materials at Area A was also observed (PAP-00189334).

PAHs

No onsite sampling data were available from the time period during which Atlantic Refining Company owned/operated the Terminal.

Lead

No onsite sampling data were available from the time period during which Atlantic Refining Company owned/operated the Terminal.

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).

mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

According to a *Cleanup Plan*, prepared for Texaco, dated October 1989, a portion of the site is underlain by fill, which contains a variety of material consisting of brick, and concrete fragments cinders, and sand and gravel in a silt and sand matrix (PAS-00004910-11). According to a *Remedial Action Work Plan Addendum, Getty Newark Terminal – Area A*, dated August 21, 2013, artificial fill comprises the upper two to 12 feet of the unconsolidated materials at Area A (PAP-00189228, 44).

The *Remedial Action Work Plan Addendum, Getty Newark Terminal – Area A*, dated August 21, 2013, states that the range of PAH, lead, and PCB concentrations detected at Area A are within the range of concentrations identified in historic fill and that the presence of PAH, lead, and PCB impacts at the site "are directly attributable to these historic fill materials" (PAP-00189233). The 2014 PA/SI states that an evaluation conducted in 2006 by Conestoga-Rovers and Associates concluded that fill is present throughout the full extent of the East and West Yards and that the presence of PAHs and lead are indicative of "historic fill" (PAP-00084092). An evaluation as part of the *Remedial Investigation Report*, prepared for Getty Properties Corp., dated April 2016 (2016 RI), also states that PAHs and lead in soil are due to fill (PAP-00086186).
No onsite sampling data were available from the time period during which Atlantic Refining Company owned/operated the Terminal. The following data pertaining to fill were collected from Area A of the facility, as identified in the *Remedial Action Work Plan Addendum, Getty Newark Terminal – Area A*, dated August 21, 2013 (PAP-00189291) and the *Cleanup Plan*, prepared for Texaco, dated October 1989 (PAS-00005003). The *Cleanup Plan*, prepared for Texaco, dated October 1989, states Area A was never used for facility operations (PAS-00004919). It should be noted that these data may not be indicative of soil concentrations at the time of Atlantic Refining Company's ownership/operation of the facility.

The levels of PCBs, PAHs and lead detected at the site in soils are presented in the table below.

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[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

COCs Found In Onsite Soils	
COC	**Maximum Detected Concentration**
Lead	8,200 mg/kg
Benzo(a)anthracene	12 mg/kg
Benzo(a)pyrene	19 mg/kg
Benzo(b)fluoranthene	23 mg/kg
Benzo(k)fluoranthene	26 mg/kg
Dibenzo(a,h)anthracene	2.8 mg/kg
Indeno(1,2,3-cd)pyrene	10 mg/kg
PCBs	40 mg/kg

*Note these data were collected after Atlantic Refining Company's ownership/operation of the site.

No information is available to determine if fill material was present at the terminal site during the period of Atlantic Refining Company's ownership or operation of the site. According to a description of historial aerial photographs presented in a 2014 *Remedial Investigation Report, Area A*, prepared by Leidos Engineering, Inc., filling activities may have taken place in Area A some time between 1947 and 1959, but not earlier (PAP-00066683). It is unknown if fill material (if any was present at the site prior to 1951) was disturbed during the period of Atlantic Refining Company's ownership/operation of the site.

5. COC Pathways

The site lies adjacent to the bank of the Passaic River (PAS-00004907).

No information on COC pathways during the time which Atlantic Refining Company owned/operated the facility is available; however, according to a *Cleanup Plan*, prepared for Texaco, dated October 1989, the average slope across the site is approximately 2-3 percent and is toward the east in the direction of the Passaic River. There are no streams, creeks or lakes located on the site (PAS-00004911-12). The 2014 PA/SI states that the Passaic River "frequently" floods the East Yard and parts of the West Yard during heavy storms and hurricanes (PAP-00084099); however, records of flooding during Atlantic Refining Company's ownership/operation of the site were not identified. The 2014 PA/SI states that a review of historical maps, aerial photographs and reports do not show any on-site wastewater treatment, septic system or discharge sources (PAP-00084090).

Storm Sewer

At the time of the 2014 PA/SI, no storm sewer drains were observed in the West Yard. Multiple storm and trench drains were observed in the East Yard (PAP-00084115); however, it is unknown from a review of available documents if these were present at the time of Atlantic Refining Company's ownership/operation of the site.

Direct Release

There is no information regarding direct release in the available file material.

Spills

There is no information regarding spills in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

There is no information regarding inspections in the available file material.

Violations/Enforcement Actions

There is no information regarding violations in the available file material.

Permits

There is no information regarding permits in the available file material.

7. Response Actions

Characterization Activities

There is no information regarding characterization activities in the available file material.

Sewer

There is no information regarding sewer sampling data in the available file material.

Soil

No onsite sampling data were available from the time period during which Atlantic Refining Company owned/operated the terminal. Data collected from the terminal after Atlantic Refining Company's time identified the presence of COCs in soil, groundwater, and surface water. It is unclear if these detections are the result of Atlantic Refining Company's operations or that of subsequent owners/operators. These data are discussed further below:

- As documented in the *Cleanup Plan*, prepared for Texaco, dated October 1989, lead was detected in the late 1980s in surface soil in a tank basin at a maximum concentration of 1,200 mg/kg, in a storm water discharge area at a maximum concentration of 2,700 mg/kg, and in Area A at 18 to 24 inches below ground surface at 8,200 mg/kg (PAS-00004921, 83, 87, 5003.

- In May 1990, a waste classification sample collected for disposal from Area A showed the presence of PCBs in the soil. Subsequently, NJDEP requested additional investigation to evaluate the potential presence of historic fill in Area A. Remedial activities conducted in 1990/1991 included the excavation and off-site disposal of approximately 4,000 tons of lead and PCB-impacted soil from Area A. The presence of PCBs extended to the property boundaries, and the concentrations of PCBs in soil samples showed decreasing concentrations with depth. In addition, PAHs were identified at various locations no greater than four feet deep in the fill material within Area A (PAP-00189231-32). "Hot spots" of PCB contamination were those with concentrations ranging from 20 mg/kg to 40 mg/kg (PAP-00189383), detected primarily in surface soil (PAP-00066766). Further removal of 229 tons of PCB-impacted soil was performed in 1996 (PAP-00189231-32). Upon completion of site investigation activities, an engineered cap was proposed for Area A (PAP-00189234). According to a *Remedial Action Work Plan Addendum*, dated April 21, 2013, the maximum PCB concentration at Area A remaining onsite was reported to be 1.52 mg/kg and the maximum concentration of lead was reported to be 996 mg/kg (PAP-00189268, 91). According to a *Remedial Investigation Report*, dated July 2014, PCB-impacted soils remain on-site at concentrations ranging from 0.064 mg/kg to 10.5 mg/kg (PAP-00066698).

Remedial Activities

There is no information regarding remedial activities in the available file material.

8. Summary of Asserted Legal Defenses

ARC asserts that petroleum, including crude oil or any fraction thereof, is not a CERCLA hazardous substance, such that a release of petroleum does not create CERCLA liability. 42 U.S.C § 9601(14).

ATLAS REFINERY

Facility Address and Size: Atlas Refinery, 142 Lockwood Street: Facility includes 130-132 and 134-152 Lockwood Street and 121-143 Lister Ave., Newark, New Jersey (Block 2438, Lot 65, 66 and 68; Block 2412, Lots 7 and 82). 2.31 acres (PAP-00691256).

A May 15, 1972, PVSC Waste Effluent Survey states that Atlas had 36 employees with an average production of 12,000,000 lbs/yr of oil for the leather, textile and paper industry (PAS-00072990). An April 10, 1975, PVSC Waste Effluent Survey states that Atlas had 48 employees and an average production of the same type of materials of 14,000,000 lbs/yr. Operations were listed as refining of animal oils; sulfation and sulfonation of animal, vegetable and marine oils; and sulfation and sulfonation of straight chain hydrocarbons (PAS-00072980, PAS-00072990).

1. **Business Type:** Manufactures products used in the leather tanning industry. Operations include blending, aeration and various chemical reactions (PAP-00691080).[1]

2. **Time Period of Ownership/Operations**

   Operator: December 1897 to Present
   Owner: July 1918 to Present

   Atlas was incorporated on December 7, 1897 (PAS-00052059). According to an August 1, 1996, Response to Information Request, Atlas operated at the 142 Lockwood Street location since 1897, and has been the only company that has owned and operated the facility from 1940 to the present (PAS-00051977; PAS-00051980). However, a July 12, 1996, Response to Information Request states that Atlas operated at this location since 1887, and a historical brochure notes that the business origins stem from 1887 when Frederick Schroeder used a wood-fired kettle to render animal oils on the Schroeder family farm (PAS-00052101).

   According to the 1996 Response to Request for Information, the 142 Lockwood facility was expanded through the purchase of adjacent property. After occupying a portion of the facility as a tenant from 1897 to July 1, 1918, Atlas purchased this property from Frederic Schroeder and Emily Schroeder on July 1, 1918. Other portions of the facility were added through purchases from the following companies on the dates noted:

   - American Hair Felt Company; January 16, 1918
   - Continental Oil Company; August 30, 1943
   - The Central Railroad Company of New Jersey; June 30, 1969
   - Messinger Trucking; June 9, 1972 (PAS-00051980).

   No information was provided regarding the acreage of the property purchased from the above entities or the condition of the property at the time of purchase.

[1] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

3. Operational History/COC Use and Presence at the Facility

According to a February 2009 Phase I Environmental Site Assessment Report (SAR), Sanborn maps indicate that the earlier operations as Fred Schroeder – Grease and Tallow Refining in 1892. The operations were conducted in a single small building located in the northwest corner of what is currently Block 2412, Lot 7. Subsequent Sanborn maps from 1908 through 2003 depict Atlas as the sole operator at the Site and Schroeder family and / or Atlas have operated at the site since originally developed circa 1892 (PAP-00691258).[2]

According to a historical brochure, in 1887 Frederick Schroeder used a wood-fired kettle to render animal oils on the Schroeder family farm. He started a small business, collecting animal fat from Newark area farms and selling the by-products to local tanneries. This local trade was used as a springboard for developing and marketing new chemicals, then expanding the business to a nationwide level. The family farm was transformed into Atlas Refinery—at the same site of today's corporate operations and the business grew steadily during the early years. Atlas experimented with many different processes to improve leather-related products; at one time oils were bleached by sunlight in a "greenhouse" arrangement. The company also developed new paint oils and one of the first synthetic linseed oils. With the outbreak of World War I, Atlas supplied neatsfoot oil to the U.S. Cavalry for its saddlery (PAS-00103492).

During the 1920s, production increased at the facility. Demand grew for Atlas oil, a sulphated cod oil and the company established an in-house cooperage to meet the need for barrels. In the 1930's, “huge” storage tanks were erected on floating foundations, which rise and fall with the movement of the area's water table (PAS-00103493). During the 1950’s, the plant was renovated and a quality control system was developed to ensure the consistency of intermediates as well as finished products (PAS-00103495).

In the late 1980s, Atlas completed a 5,000 square foot research and development, quality control and tanning laboratory. In the pilot tanning area, significant results were made in experimental tanning, evaluation of new products and developmental work with “wet blue stock.” This included the installation of three stainless steel, fully automated Dose tanning drums; a dry mill; and an automatic temperature-controlled toggling and paste-drying unit (PAS-00103491).

According to a February 2009 SAR, the facility is comprised of three major manufacturing areas, chemical, textile, and sulfo. Additionally, there is a warehouse area, a wet chemistry laboratory, “blow shed” (where air is blown into natural oils), a courtyard for storage, a hot storage area, a tannery building, a loading / unloading area, a finished goods warehouse, and a large paved parking area. The chemical area is contained in a three-story brick building located behind the office building. The textile and sulfo areas are contained in two two-story buildings. Information obtained from the Sanborn Maps show these buildings were present on the Property in 1931 with small changes in later maps (PAP-00691257).

[2] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery’s previous certification.

In the paved courtyard between buildings, on the western side of the Property, two trailers and the courtyard are utilized as storage space for solid chemicals stored in 55-gallon drums as well as empty containers waiting to be filled (PAP-00691257). According to a Daily Inventory Plant Pumper Inspection Log Atlas storage the following materials (PAP-00691008).

MATERIAL	TANK NUMBER	TANK CAPACITY
Herring Oil	#1 Dough Boy	13,00dr / 305in
	#2 Dough Boy	840dr / 344in
Herring Oil	#3 Dough Boy	840dr / 344in
	Big Blue	1300dr / 360in
	#1 Ozite Tank	500 dr.
	#2 Ozite Tank	500 dr.
	B.R. Side Tank#1	60 dr.
	B.R. Side Tank#2	60 dr.
	B.R. Side Tank#3	60 dr.
# 6 Fuel Oil	Fuel Oil Tank	8100 dr.
	Blow Shed Tank	100 dr.
	Blow Shed Tank	100 dr.
	Blow Shed Tank	
	Hot Storage #1	160 dr
	Hot Storage #2	160 dr
	Hot Storage #3	160 dr
	Hot Storage #4	160 dr
	Hot Storage #5	160 dr
	Hot Storage #6	160 dr
Crude Recovery Oil	A-20 Tank	100 dr.
	640 Tank	170 dr.
25% Caustic	Large Tank	10,000 gal

Raw materials are delivered to the Property via bulk truck (tank wagons), rail, and drums. Bulk truck deliveries utilize the loading dock on Lockwood Street and the loading dock on the northern portion of the facility. Approximately, 80% of deliveries are bulk and pumped directly into the tanks. Bulk rail deliveries are for sporadic fish and lard oil deliveries only and each load is approximately 180,000 pounds of material. Drum deliveries utilize the loading dock on the northern portion of the facility and are brought directly into the manufacturing area (PAP-00691258).[3]

During processing, raw materials are pumped from tanks, through most 2-inch lines and some 3-inch lines, into reactor tanks. The platforms are utilized to add small amounts of raw materials as well as collect samples for testing in the quality control department. Most products turn into gel and/or solids at a certain temperature therefore tanks are both heated and/or agitated with air and the heat must be flow-able. Final products are pumped into or gravity-emptied into drums with some bulk filling into "tank wagons". Some product is placed in smaller pails and used as samples (PAP-00691258).[3]

A July 1986 Application for a Sewer Connection Permit states that the principal products were water-soluble lubricants for the leather, textile and paper industries. The company processes included sulfate and sulphonate of natural and synthetic oils. The principal raw materials included fish oil, lard oil, petroleum oil and vegetable oils (PAS-00072965-67).

[3] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

According to a February 2009 SAR, all water from the facility is collected and processed through a central recovery system. The treatment includes a pH adjustment, oil and water separation through the use of a polymer and where the oil separates to the top of the water, a pH increase, and finally a separation where the water goes into a drain and oil in a holding tank where it can be held until sold as fuel (PAP-00691258).

The blow shed is utilized to create intermediates. The viscosity of a product is increased to thicker oil. Intermediate batches are pre-made and added to another batch (PAP-00691258). There are two boilers on the Property. The older boiler (approx. 1906) is fired using #6 fuel oil and the newer boiler is fired using gas. There is also #2 fuel oil on-site but is not currently being used and there were plans to remove the tank (PAP-00691258).

During the site reconnaissance it was reported that approximately 80% of deliveries to the Site are via bulk truck / tank wagons deliveries, which are pumped directly into tanks. Drum deliveries are received at the loading dock located on the north side of warehouse and reportedly these materials usually go directly to the manufacturing area where they are needed. Most final products were reportedly pumped into and shipped in drums, with some bulk filling into tank wagons. Drums with finished products are stored in the Finished Goods Warehouse, located in the northwestern portion of the facility, and are loaded onto trucks for delivery using the adjacent loading docks (PAP-00691274-75).

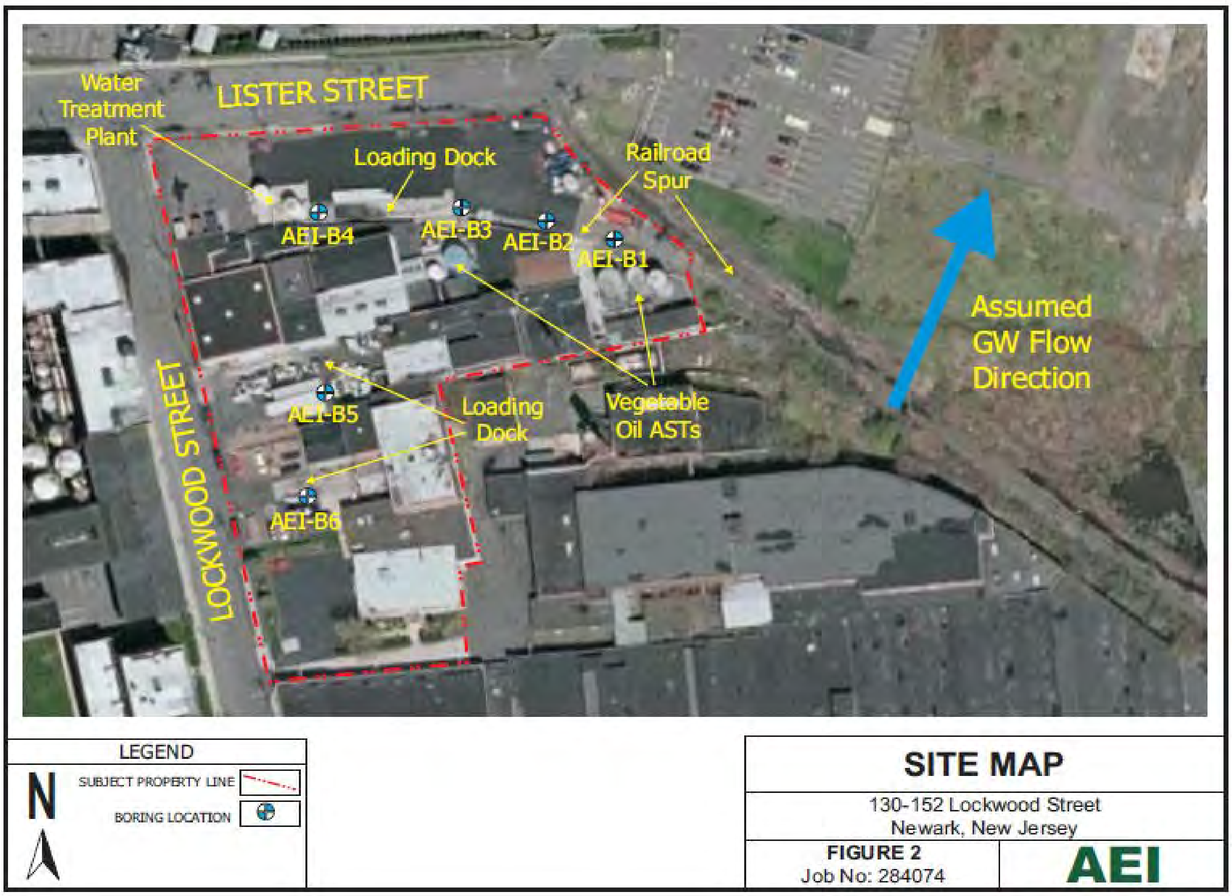
No evidence of underground storage tanks (USTs) was observed during the site reconnaissance conducted by ESA, and reportedly no USTs are known to have ever been present on the Site. Numerous aboveground storage tanks (ASTs) were observed throughout the Property, both within the facility interior and exterior. Based on visual observations, it appeared that the ASTs are in good condition (PAP-00691275).

The majority of the ASTs associated with the operations at the site are located within the facility interior. Exceptions to this include three fish oil ASTs located outside the Blow Shed at the northeastern portion of the facility, a salmon oil AST and caustic tank, both double lined vertical tanks, located outside near the drum storage area at the northwestern portion of the facility, and a former rail car that was used as a tank at one time, but was reportedly last used approximately 50 years ago. Additionally, two fuel oil ASTs are present. One AST is used to store #6 heating fuel oil that is used for heating purposes; this tank is reportedly approximately 100 years old. The second tank contains #2 heating fuel oil, which is reportedly not currently used any longer and therefore Atlas plans on removing this tank in the future (PAP-00691275).[4]

A Community Righty to Know Survey from 1993 states that Atlas Refinery was a manufacturer of specialty chemicals and fibre lubricants. A 1995 survey states that it was a manufacturer of fiber lubricants for the leather industry (PAS-00052030, PAS-00052041).

[4] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

A 1994 RCRA Inspection Report stated that Atlas was a manufacturer of a variety of water-soluble oils for the Leather Tanning industry. Atlas sold these oils directly to Leather Tanners around the world. They were specifically used to make leather feel softer and to increase resistance from discoloration to high temperatures and light. Atlas was using a variety of insoluble oils including: fish oil, castor oil, toluol fatty acid and other mineral oils that mixed with sulfuric acid to create a sulfonated oil. This reaction took place in one of several vertical tanks under atmospheric pressure. Water was added during the cooking process at 350 F. After the product had been cooked it was dropped to a vessel and cooled overnight (20 to 24 hours). Before packaging in 55-gallon drums, it was neutralized using a caustic solution (PAS-00103487-88).
Surveys from 1993 to 1995, show areas where chemicals were stored included a second and third floor chemical departments, an outside maintenance department, first floor engine room, outside of laboratory building, second floor textile department, a rear shipping dock and tannery. Chemicals listed included among others acetic acid, ammonium bicarbonate, ammonium persulfate, diethylene triamine, petroleum naphtha, and sodium hydroxide (PAS-00052030-44).



(PAP-00691309)[5]

[5] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

4. Identified COCs

- PAH (used and released)
- Copper (used)
- Mercury (used)
- Lead (used)

Copper, lead and mercury were detected in plant effluent. Petroleum hydrocarbons were also detected in plant effluent. Petroleum hydrocarbons can contain PAHs. Mercury wastes were generated on site in 1993.

PAHs

According to a PVSC User Charge Self-Monitoring Reports, Atlas Refinery's effluent included 8.4 mg/l of petroleum hydrocarbons in November 1994 and <1.0 mg/l of petroleum hydrocarbons in June of 1996 (PAS-00051978, PAS-00051984-85).

Sampling in June 1996 showed <1 mg/l of petroleum hydrocarbons and 32 mg/l of oil and grease (PAS-00051986-90).

According to a July 16, 2009 Phase II Subsurface Investigation prepared by AEI Consultants, the follow concentrations of PAHs were detected on site with sampling locations on the above site map (PAP-00691311).[6]

Sample ID:	AEI-B1	AEI-B2	AEI-B3	AEI-B4	AEI-B5	AEI-B6	NJDEP - Non Residential Direct Contact Soil Cleanup Criteria	NJDEP - Impact to GW Soil Cleanup Criteria
Sample Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sample Depth:	4'	4'	4'	4'	4'	4'		
Sample Date:	6/29/2009	6/29/2009	6/29/2009	6/29/2009	6/29/2009	6/29/2009		
Volatile Organic Compounds (VOCs) via EPA Method 8260:								
Acetone	0.16700	0.51500	0.16100	0.03030	0.00492	0.01610	1000	100
Carbon Disulfide	0.00817	0.00976	ND	ND	ND	ND	NR	NR
2-Butanone	0.04270	0.10600	0.04210	ND	ND	ND	1000	50
Toluene	ND	0.00303	0.00442	0.00230	ND	0.00060	1000	500
Ethylbenzene	ND	ND	0.01200	ND	ND	ND	1000	100
M&P Xylenes	ND	ND	0.08360	ND	ND	ND	1000	10
O-Xylenes	ND	ND	0.01560	ND	ND	ND	1000	10
All other VOCs	ND	ND	ND	ND	ND	ND	N/A	N/A
Semi Volatile Organic Compounds (SVOCs) via EPA Method 8270:								
Naphthalene	ND	0.42700	ND	ND	ND	ND	4200	100
2-Methylnaphthalene	ND	0.22600	ND	ND	ND	ND	NR	NR
Dimethylphthalate	0.06330	ND	ND	ND	ND	ND	10000	50
Acenaphthene	ND	ND	0.90900	ND	ND	ND	10000	100
Dibenzofuran	ND	ND	0.37400	ND	ND	ND	NR	NR
Fluorene	ND	ND	0.55600	ND	ND	ND	10000	100
Phenanthrene	ND	0.50300	1.26000	ND	ND	ND	NR	NR
Anthracene	ND	ND	0.64400	ND	ND	ND	10000	100
Fluoranthene	ND	0.88200	2.93000	ND	ND	ND	10000	100
Pyrene	ND	0.79700	2.86000	ND	ND	ND	10000	100
Benzo(a)anthracene	ND	0.50900	0.85900	ND	ND	ND	4	500
Chrysene	ND	0.63600	1.23000	ND	ND	ND	40	500
Bis(2-Ethylhexyl)Phthalate	ND	ND	1.58000	ND	ND	ND	210	100
Benzo(b)fluoranthene	ND	0.62200	0.87000	ND	ND	ND	4	50
Benzo(k)fluoranthene	ND	0.48200	0.58900	ND	ND	ND	4	500
Benzo(a)pyrene	ND	ND	0.51800	ND	ND	ND	0.66	100
All other SVOCs	ND	ND	ND	ND	ND	ND	N/A	N/A

Notes:
ND = Non Detect
N/A = Not Applicable
NR = Not Regulated
Bold and highlighted values are in excess of the NJDEP Soil Cleanup Criteria

[6] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

Copper

PVSC Waste Effluent Surveys from 1972 and 1975, state that wastewater at the Atlas facility contained 4.438 mg/l of copper and <4.5 mg/l of copper in 1974 (PAS-00072991; PAS-00072981).

A July 1986 Application for a Sewer Connection Permit states that an analysis of industrial waste showed copper at 0.22 mg/l along with other metals (cadmium, chromium, cyanide, nickel, zinc) and phenol (PAS-00072970).

A 1991 Application for a Sewer Connection Permit states that an analysis of the industrial wastewater showed copper at 0.73 mg/l as well as other metals (chromium, nickel and iron) (PAS-00103451).

Reports of Analysis from Garden State Laboratories, Inc. showed results of samples taken from Building #5 wastewater for copper from October 19, 1994, to October 26, 1994, to have a max concentration of 0.21 mg/l (PAP-00051987-89).

A Phase II Heavy Metals Source Determination Study was conducted by Elson T. Killam Associates in April 1980 for PVSC (1980 Killiam Phase II Study) in compliance with an ocean dumping permit (PAS-00114124). Industrial sampling was undertaken for industries in the PVSC service area to identify the sources of heavy metals in the waste effluent and provide an initial basis for development of a pretreatment program. The study utilized a list of significant metals contributing industries in conjunction with an identification of the sub-areas with heavy contributions of industrial metals compiled during a Phase I study (PAS-00114142). A PVSC Heavy Metal Source Determination, Phase II Industrial Contribution, Sub-Area 0 table lists Atlas Refinery with 0.066 lbs/day of copper (0.358 mg/l) (PAS-00114149). A similar table showing “after pretreatment” amounts shows 0.066 lbs/day of copper at 0.358 mg/l) (PAS-00114153).

Lead

PVSC Waste Effluent Surveys from 1972 and 1975, state that wastewater at the Atlas facility contained 7.175 mg/l of lead in 1971, and 4.5 to 45.4 mg/l of lead in 1974 (PAS-00072991; PAS-00072981).

A January 6, 1977, correspondence requesting a response from PVSC to Atlas regarding the heavy metals noted in the Waste Effluent Surveys, states that the heavy metal (lead) in Atlas’s wastewater was coming from lead-lined neutralization tanks and that these tanks were being replaced with fiberglass (PAS-00072994). The correspondence does not refer to other metals.

A PVSC Heavy Metal Source Determination, Phase II Industrial Contribution, Sub-Area 0 table lists Atlas Refinery with 0.782 lbs/day of lead or 4.260 mg/l (PAS-00114149). A similar table showing “after pretreatment” amounts shows 0.55 lbs/day of lead at 0.300 mg/l (PAS-00114153).

A July 1986 Application for a Sewer Connection Permit states that an analysis of industrial waste showed 1.0 mg/l lead, along with other metals (cadmium, chromium, cyanide, nickel, zinc) and phenol (PAS-00072970).

A 1991 Application for a Sewer Connection Permit states that an analysis of the industrial wastewater showed lead at 0.17 mg/l as well as other metals (chromium, nickel and iron) (PAS-00103451).

Reports of Analysis from Garden State Laboratories, Inc. showed results of samples taken from Building #5 wastewater for lead as follows:

- October 19, 1994 - 0.216 mg/l
- October 21, 1994 - 0.046 mg/l
- October 26, 1994 - 0.033 mg/l (PAP- 00051987-89).

Mercury

A PVSC Heavy Metal Source Determination, Phase II Industrial Contribution, Sub-Area 0 table lists Atlas Refinery with mercury at 0.001 mg/l (PAS-00114149). A similar table showing "after pretreatment" amounts shows mercury at 0.001 mg/l (PAS-00114153).

A February 12, 1993, Maryland Department of Environment Hazardous Waste Manifest, notes that Atlas Refinery was the generator of chemicals including 20 pounds of metallic waste mercury and 20 pounds of waste mercurous nitrate. The wastes were shipped to Laidlaw Environmental Services in Laurel, Maryland (PAS-00052001).

Reports of Analysis from Garden State Laboratories, Inc. showed results of samples taken from Building #5 wastewater on October 19, 21, and 26, 1994, for mercury were <0.001 mg/L (non-detect) (PAP-00051987-89).

Historic Fill

The Allocation Team has determined that the facility site is partially located on regional Historic Fill as designated by the NJDEP.[7]

The NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[8] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the United States Environmental Protection Agency (EPA) Target Compound List (TCL) for PAHs and Target Analyte List (TAL) for

[7] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).

[8] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

metals, including lead, copper, mercury, and the OU2 PAH COCs.[9] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[10]

According to a February 2009 SAR, information contained in geotechnical soil boring logs from 1994 and 1995 indicated that fill material consisting of black to dark brown silty sand and gravel is present from 0-11 ft bgs, with gravel coarser with depth. A peat layer was identified at 11-11.5 ft, underlain by medium to coarse sand to approximately 24 feet, follow by find sand (PAP-00691268).[11]

According to a February 2009 SAR, Sanborn maps from 1892 show one building present and a loading dock on the property, in 1908 five buildings are present. The largest appears to be split into 10 different sections. In 1931 six buildings are present, the largest being split into 20 different sections, in 1950 the property have two additions, keg racks and four ASTs in the northeastern corner of the property. In 1973 the northern portion of the Property has been developed along the railroad spur and three one-story buildings appear in the northwestern portion (PAP-00691265).[11]

The levels of copper, lead and mercury detected at the site in soils are presented in the table below (PAS-00072991; PAS-00072981; PAP-00691311).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	45.400 mg/kg
Copper	4.438 mg/kg
Mercury	0.001 mg/kg
Benzo(a)anthracene	0.859 mg/kg[11]
Benzo(a)pyrene	0.518 mg/kg[11]
Benzo(b)fluoranthene	0.859 mg/kg[11]
Benzo(k)fluoranthene	0.589 mg/kg[11]

[9] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[10] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

[11] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

5. COC Pathways

Sanitary and Storm Sewers

Atlas used both sanitary and storm sewers. Plant wastewater was released to the sanitary sewer since the creation of PVSC. No information was available regarding where the plant wastewater was released prior to the development of the sanitary sewer. In addition, in at least the early 1970s, oil was released as a result of Atlas activities in the railyard near the Central Railroad tracks, and during periods of rainfall this material drained towards Blanchard Street and entered the catch basin and thus the Passaic River. In 1977, dye that was introduced into one of the oil separators at the facility appeared in the Lockwood Street storm sewer. See also Section 8 Regulatory History below.

The company states that there has been no disposal or discharge of any hazardous material to the Passaic River from Atlas at any time. They also state that there has not been any incident resulting in a release or a discharge of any hazardous material on the property, into the wastewater or storm drainage system at the facility or to the Passaic River (PAS-00051979).

According to a February 2009 SAR, there exists in the facility a series a floor drains, trenches, and sumps that collect all waste water and directs the waste water to a waste water treatment system located alongside the Finished Good Warehouse building, at the northwestern portion of the facility (PAP-000691276). Additionally, the following was noted during the site reconnaissance (PAP-00691276-77):[12]

- Floor trench drains were observed in the Wet Chemistry Area. The drains feed into a sump, which receive and transport any water into the facility waste water treatment system.

- A collection pit was observed outside the Hot Box room. The Hot Box has a small boiler and is used to melt drummed materials, as the material in the drums are solid and must be heated to liquefy the material. Sometimes leaks reportedly occur when the drums are heated. This pit is reportedly kept clean because any material that accumulates in the pit will solidify as it cools and, once solidified, will clog and back up the drain.

- Drains were observed in the exterior Yard Storage Area, and are designed to collect any spills and runoff from this storage area. This drain system is connected to the facility waste water recovery system, with all water from this area passing through the treatment system and ultimately discharged to the sanitary sewer.

[12] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

- Floor drains were observed on the first floor of the "Tannery" Building, located adjacent to the Yard Storage Area. These drains reportedly tie into the facility waste water recovery system.

- Drums and small containers are filled on the first floor of the Sulfo building via gravity feed from overhead tanks and/or lines. The drums and containers are filled on scales, which have pits beneath them that collect any spillage. Anything collected in the pits is processed through the facility waste water recovery system. Similarly, floor drains and trenches observed in the fill areas are tied into the facility waste water recovery system.

- Two boilers are used for heating purposes; one high pressure steam boiler that is fired using gas, and one low pressure steam boiler that is fired using #6 fuel oil. The fuel oil fired boiler was installed circa 1906, while the gas fired boiler is newer. A tank is present in the boiler room for chemical adjustment of boiler water / steam condensate. A blow down pit is also present and is used to collect any blow down from the boilers, which in turn is tied into the facility waste water recovery system.

- Drainage ports observed in the Outside Drum Storage Area located in the northern portion of the facility reportedly also tie into the facility waste water recovery system.

All water from the facility is directed to a single pit located on the first floor of the building. This pit is constructed with a solid fiberglass tank set in concrete. The water collects in this pit, and is then pumped to three holding tanks located on the 2nd floor. The pit is reportedly pumped, cleaned and inspected on a regular basis as per MUA requirements (PAP-000691277).[13]

As indicated, upstairs are three tanks used to hold the waste water. The waste water then undergoes the following process: tanks are filled with water → pH is checked → polymer is added to adjust pH and is then agitated → then allowed to set while the oil and water separate, oil to the top and water to the bottom → oil is then pumped into another tank and any remaining water is "cooked off" (lost through evaporation) → the oil next goes to a cool off vat, after which the oil is sold (PAP-000691277).

After processing as described above, the water then passes through a final separator, prior to being discharged to the sanitary sewer. A collection pit is present next to the final separator in case of any problems, such as leaks, spills or overflows, which are collected in the pit and pumped directly back into the waste water recovery system (PAP-000691277-78).

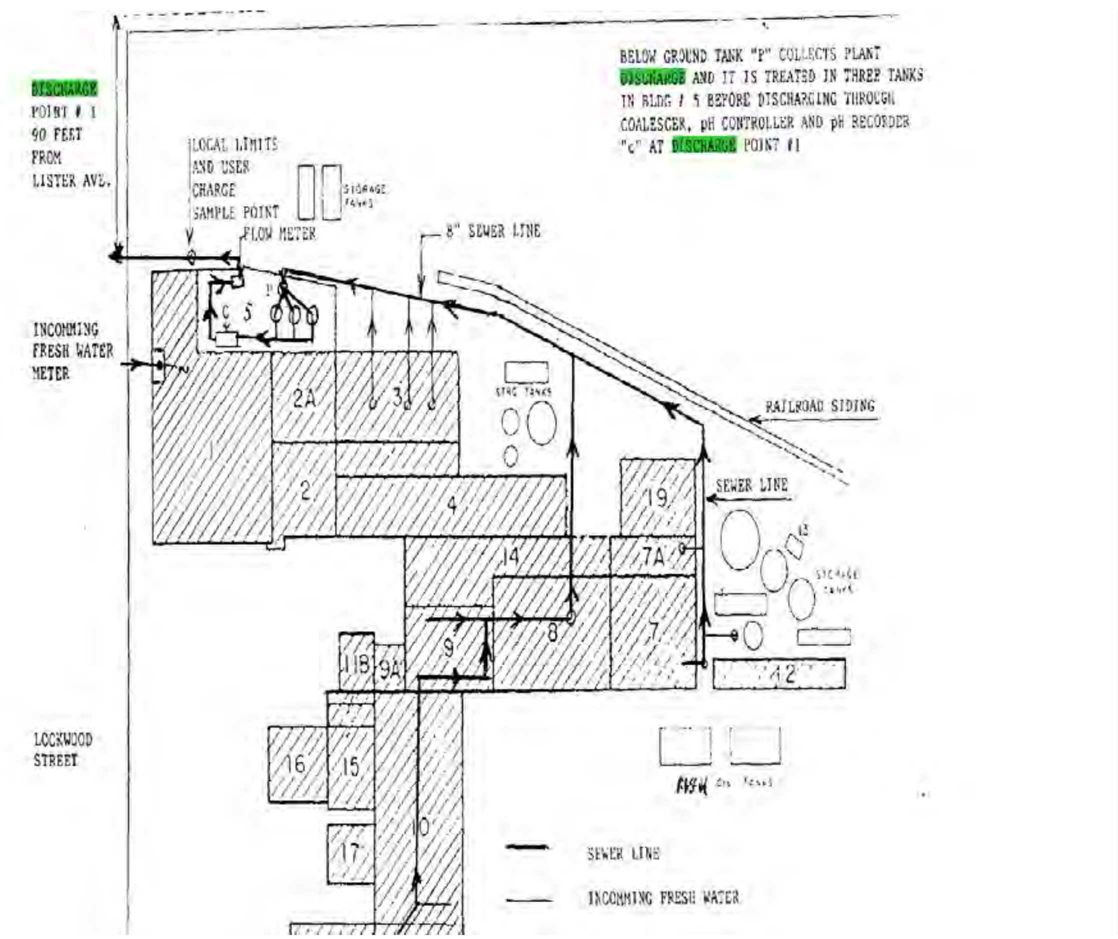
A sampling port is located after the final separator, and is where samples are collected by the MUA (Passaic Valley). Additionally, monitors are present to monitor the pH and flow rate of the waste water discharge to the sewer. The waste water effluent is

[13] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

reportedly checked monthly by the MUA, plus in-house testing is done by Atlas. A monthly effluent report is submitted the 20th of every month to the MUA. During the ESA site reconnaissance it was reported that there have been no problems associated with the waste water discharge, and that Atlas has received recognition from the MUA based on the test results (PAP-000691278).

Documentary evidence reviewed by ESA as part of this Phase I indicated that the Passaic Valley Sewerage Authority filed a Civil Action Complaint against Atlas for alleged violations as noted in violations issued to Atlas by Passaic Valley on or about April 28, 1986, October 20, 1986, February 24, 1988, April 8, 1988, May 24, 1988, June 28, 1988, August 3, 1988, September 22, 1988, November 22, 1988 and January 23, 1989. Atlas disputed the alleged violations and the suit was subsequently resolved with Atlas paying a $25,000 settlement to Passaic Valley and completing upgrades to the waste water recovery system (PAP-00691278).

A June 13, 1996, Plant Effluent Flow Diagram shows that a below ground tank collected plant discharge and was treated in three tanks in Building #5 before discharging through a coalesce, pH controller and pH recorder to the sanitary sewer at Discharge Point 1 as shown below which is noted to be on Lockwood Street, 90 feet from Lister Ave: (PAS-00051995).



Approximately 1,700,000 gallons of water were released to the sanitary sewer in 1971 and approximately 2,000,000 gallons of water was released to the sanitary sewer in 1974 (PAS-0007298, PAS-00072991). Wastewater was discharged to sanitary sewer intermittently for approximately 8 hours daily at a peak rate flow of 2,000 gallons/hour between.7:30 a.m. and 8:30 a.m. in 1971 and 2,000-2500 gallons/hour between 7:30 a.m. and 9:30 a.m. in 1974 (PAS-00072982; PAS-00072992).

According to a PVSC User Charge Self-Monitoring Reports, Atlas Refinery discharged the following volume of effluent to the sanitary sewer in the 1990s:

Atlas Sanitary Sewer Effluent (mg/L)		
Date	**Volume**	**Petroleum Hydrocarbons**
November 1994	100,500 mg/L	8.4
June 1996	137,400 mg/L	<1.0

(PAS-00051978, PAS-00051984-85).

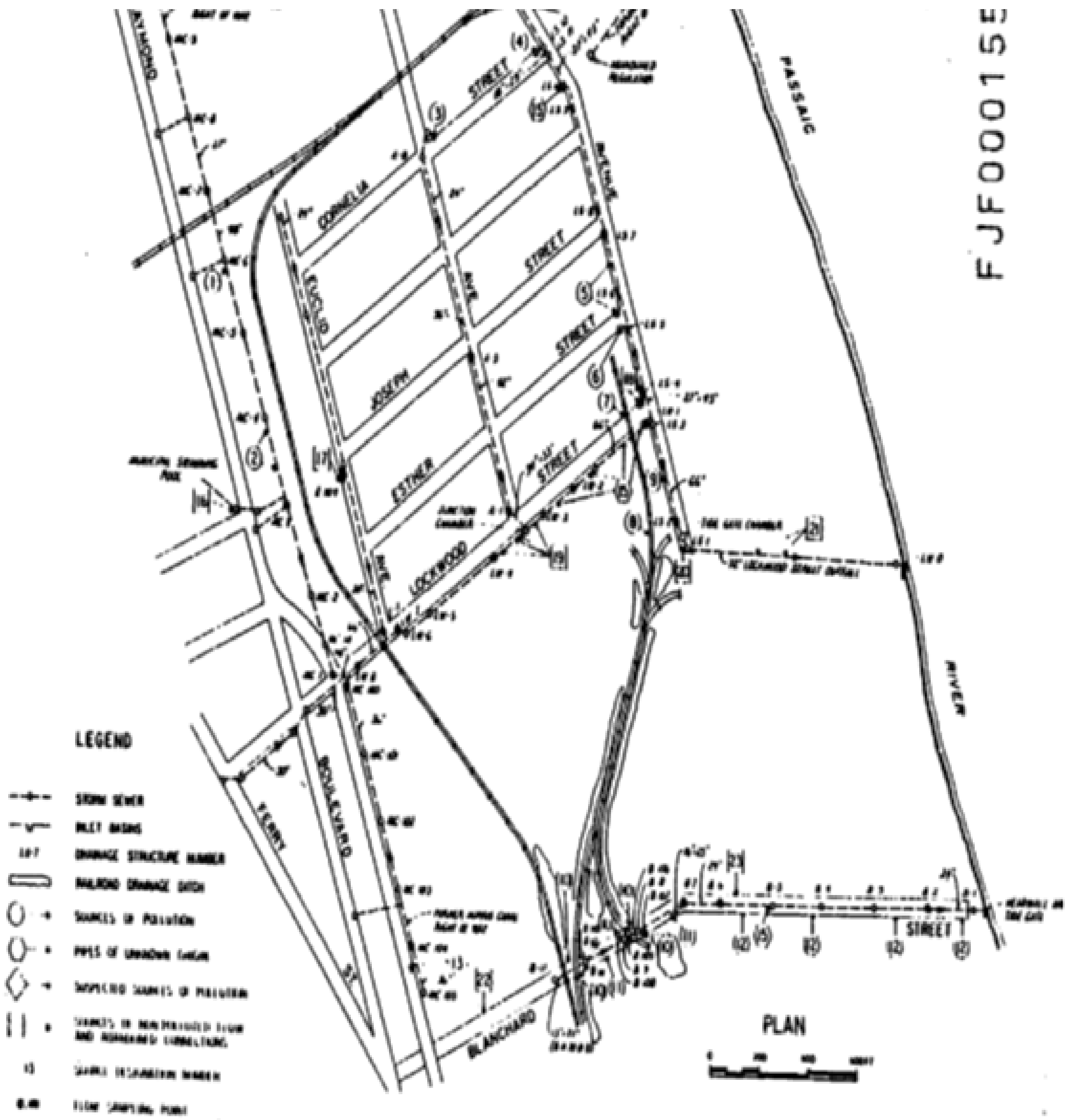
The August 1, 1996 Response to Request for Information states that there was no hazardous waste processing, treatment, storage or on-site disposal activity at the facility (PAS-00051977). No hazardous waste storage activity was conducted; however, some hazardous substances were used in the processes as raw materials. These chemicals were reacted with the raw materials and were chemically altered completely. They neither existed in the products nor accumulated as a waste. Hazardous material-containing drums of raw materials were stored inside the buildings. These drums were placed on concrete floors in self-contained skids for spill control purposes and only empty drums were kept outside of the buildings (PAS-00051978).

The 1996 Response to Request for Information also noted that the process wastewater generated at the facility did not contain any hazardous materials. It only required treatment for pH adjustment and oil recovery. Plant wastewater has been discharged to the PVSC sanitary sewer since the inception of the PVSC facility, the date of which was not specified. Plant wastewater has been and continues to be treated for pH adjustment and oil recovery prior to discharge, since it contains a variety of fish and lard oils. In addition, plant drains have been and continue to be connected to the sanitary sewer since the inception of the PVSC sanitary sewer. The company states that there are no records available prior to the creation of PVSC (PAS-00051978-79).

Storm sewers have also existed at the facility for many years, but the exact date that they were installed was noted to be unknown. At the time of the Response to Request for Information (1996), there was a small concrete catch basin at the north side of the facility to collect rainwater. This catch basin was built in 1972. The catch basin contained only rain water and there is no connection to the plant waste water line. According to Atlas, all storm water discharges have been released to the storm sewer. There has been no need to treat these discharges consisting solely of rainwater (PAS-00051978-79). There has been no connection to the storm basin on Blanchard Street. However, some oils were carried to the Blanchard Street storm basin over the railroad tracks by rainwater in June 1972 (see Section 7) (PAS-00051979).

A map from the 1978-1979 Feasibility Study shows the location of the Atlas facility in relation to the Lockwood and Blanchard Street Outfalls (PAS-00052138-2139). It notes two areas on the map related to the chemical spillage:

8	CHEMICAL SPILLAGE AT ATLAS REFINERY INC. RAIL-ROAD SIDING CONTAMINATING GROUND AND ENTERING RAILROAD DRAINAGE DITCHES DURING WET WEATHER.
9	RAILROAD DRAINS AND OIL SEPARATOR AT ATLAS REFINERY INC. CONNECTED TO STORM SEWER.



A July 1986 Application for a Sewer Connection Permit states that the following gallons of wastewater were released to the sanitary/combined sewer:

- Sanitary service only: 198,000
- Process Waste Water: 1,516,420
- Cooling Water: 23,030 (PAS-00072965-67).

An oil separator in building #5 received all plant industrial waste which was acidulated and heated to a boil to separate any residual oil from waste. Residual oil was recovered and separated with an automatic oil skimmer. Discharged water was neutralized to a pH of 6.8 to 7.0 and discharged in sewer outlet #1 (PAS-00072968).
A 1991 Application for a Sewer Connection Permit states that the following gallons of water were released to the sanitary/combined sewer:

- Sanitary service only: 173,000 (estimated)
- Process Waste Water: 2,541,000
- Cooling Water: 768,000 (estimated) (PAS-00103446-47).

Treatment was described as: All process water is collected and treated with polymers and pH is adjusted for complete oil and water separation. .The oil is recovered, and the water is metered through an emulsion breaking/separator system for additional pH adjustment and oil recovery (PAS-00103449).

According to the 1994 RCRA Inspection Report, any wastewater generated during both the manufacturing process and the cleaning out of lines and tanks after a batch was made, was discharged to floor drains connected to a primary Waste Water Treatment System (WWTS). Atlas' primary WWTS consisted of a coalescing separator that separated oil from the water. The recovered oil was used again in the manufacturing process. The treated effluent was discharged to a sanitary sewer leading to the PVSC under permit #20402420 (PAS-00103487-88).

Direct Release

According to a February 2009 SAR, no surface water was observed on or immediately adjacent to the Site during the ESA site reconnaissance. The nearest surface water body is the Passaic River, located to the north of the Site. Review of historical documents indicates that surface water may have been historically located on or immediately adjacent to the Site. The 1892 Sanborn map identified adjoining property to the north as marsh meadows, while the 1908 map identifies a stream on the portion of the Site that is currently identified as Block 2438, Lot 65, 66 and 68 (PAP-00691270).

Information obtained from the NJDEP Geographic Information System (i-MapNJ) indicated the site had very high, low and negligible runoff potential, it is well drained and somewhat excessively drained and has a slope percent of 0-8 (PAP-00691268).[14]

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[14] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

Floods

According to the 1996 Response to Information Request, in December 1992 there was flood overflow from the Passaic River to the site for less than one day (PAS-00052104-2105).

Spills

A Special Report dated March 20, 1981, notes that there was a spill within the plant while loading an 8,000 gallon tank of Olefant Oil (overfill of approximately 500 gallons) which was washed from the second floor. After most of it was recovered, some did reach the yard drain which goes to an oil separator then into the sanitary sewer (PAS-00103407).

According to a January 09, 2009 EDR Radius Map Report, a spill of an unknown hazardous substance occurred on July 12, 1989 at the Atlas facility the release was continuous (PAP-00691422).[15]

6. Regulatory History/Enforcement Actions

Inspections

A 1972 inspection by PVSC traced an oily liquid to Atlas Refinery's yard. A June 16, 1972 letter to the company from PVSC states that a considerable amount of oil and material lies in this yard near the Central Railroad tracks, and during periods of rainfall this polluting material drains towards Blanchard Street and enters the catch basin and thus the Passaic River (PAS-00051991). A violation summary in a PVSC Annual Report regarding Atlas Refinery dated June 6-August 4, 1972, states that oil and other industrial material going into the storm catch basin on Blanchard Street, thence to the Passaic River, was noticed by Inspector J. McLaughlin. Mr. McLaughlin reported that this is a case of poor housekeeping, where spillage from this company flows onto the Central Railroad tracks east of Blanchard Street, where it usually stays until a rain causes it to flow to Blanchard Street. Both Inspector McLaughlin and Supervisor Cuccinello notified representatives of the company concerning this matter. On June 16, Mr. Lubetkin wrote to the company, directing them to clean the area to halt the pollution. On June 27, Mr. A. Schroeder, Jr. replied, stating that the material on the tracks was caused by a broken pipe. He stated that when the broken pipe was discovered, it was immediately disconnected to halt further flow, but he did not specify the date the pipe broke or was discovered. Mr. Schroeder also stated that they had contracted to install a sanitary catch basin in the area to intercept any polluting flow and bring the material back to their plant. At the plant they were to separate and remove the oils and grease, with the remainder going to the sanitary sewer. On July 25, 1972, Mr. Schroeder wrote, informing PVSC that their contractor, John Marzano and Sons has received word from Central Railroad that they will raise the tracks while Atlas cleans the area and install permanent drainage of the surface water to the storm sewer. At the same time they

[15] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

were to install a fibre glass receiving tank and sump pump to bring the plant sanitary line back into the plant where oil and grease is to be separated before discharges to sanitary sewer. Inspector McLaughlin reported that the violation was eliminated as of August 4, 1972 (PAS-00051992-93; PAS-00052130-31).

A Stream Contamination Report dated February 29, 1977, states that there was no flow entering the Lockwood Street storm sewer from the Atlas Refinery (PAS-00103320).

On August 5, 1977, PVSC received a call from the City of Newark that they had uncovered a possible source of pollution of the Lockwood Street storm sewer. Dye-testing of the sanitary lines was conducted to determine if illegal connections existed (PAS-00103341). An August 8, 1977 Stream Contamination report says that dye testing was completed and the lines in the plant were found to be hooked directly to the sanitary sewer (PAS-00103327-28). Another PVSC Report states that on August 8, dye that was introduced into one of the oil separators appeared in the Lockwood Street storm sewer. Although the company plugged up the illegal connection, the yard area flooded when it rained, indicating additional connections, and the line was then reopened (PAS-00103341).

An August 25, 1977, letter from the Newark Department of Engineering to Atlas states the following:

- A drain of approximately four inches in diameter leading from your firm's property on Lockwood Street has been noted to be discharging objectionable material to a separate storm sewer in violation of municipal ordinances;

- Numerous spills of oily material have been noted on your firm's property and on adjacent railroad tracks, posing a hazard to the health and safety of your employees and the general public.

The company was asked to permanently seal the connection to the storm sewer and improve housekeeping (PAS-00103333). Another PVSC report notes that by September 2 the connection had been temporarily resealed eliminating the violation. Atlas planned to install an oil separator in the small yard area where the oil drums were stored and connect the overflow to the sanitary sewer. The final plans were approved by the Newark Plumbing Department on October 28 and construction was expected to be completed in November. At that time the connection to the storm sewer would be physically disconnected and abandoned (PAS-00103345).

According to a City of Newark, New Jersey, Feasibility Study Pollution Abatement Program document, September 1978, revised January 1979, inlets were receiving flow from the railroad spurs and sidings. The location of the inlets was not specified. The ditches along the tracks drained wet lands that were observed to contribute continuous flow for up to two weeks during wet periods. Chemical spillage was observed on the tracks and in the adjacent ditches. The Source of the chemicals was noted to be leakage from railroad tank cars, but no leaking cars were observed. Major spills were noted from the Atlas railroad siding. Rain was washing some of this spillage through the drainage ditches and railroad ballast into the Blanchard Street storm inlets. The report

notes that valves may not always be closed when the cars are unloaded and chemicals may drip out while the cars are standing on the spurs in a totally random pattern. Atlas, as well as The Fairmount Chemical Company, the Benjamin Moore Company, and the Fiske Brothers Refining Company, were receiving tank cars through this railroad spur at that time (PAS-00004237, PAS-00004241; PAS-00052137). The report further noted that the eastern portion of the Atlas siding was draining into railroad drainage ditches that were connected to the Blanchard Street storm sewer system (PAS-00004250).

The report states that pertaining to the Lockwood Street Outfall an abandoned railroad drain was found connected to manhole LS-1. The last 25 feet of the 72-inch outfall was exposed and showed evidence of chemical attack. A portion of the crown had completely deteriorated (PAS-00004251).

The storm and sanitary sewers on Lockwood Street, Lister Avenue, Albert Avenue, and the easterly portion of the Harris Canal right-of-way were smoke tested as part of the 1978-1979 Feasibility Study and three inflow sources were detected. All observed roof and area drains at Atlas were connected to the sanitary sewer. These drains were a major source of inflow and the report stated that they should be reconnected to the storm sewer (PAS-00004254).

The 1978-1979 Feasibility Study included a television inspection. The inspection of the Lister Avenue line revealed an oil separator at Atlas connected to the 66-inch storm sewer approximately 120 feet upstream of manhole LS-2. This connection was believed to be a major source of pollutants. There was a railroad siding drainage system connected to this oil separator. Tank cars containing chemicals were unloaded at the siding daily and spills were frequent. Much of the spillage was believed to pass through the separator and enter the Lister Avenue storm sewer. No other sources of flow were found during the television inspection of Lister Avenue. The report concludes that the flow from the Atlas oil separator, immediately downstream could cause high pollutant concentrations in the Lister Avenue storm sewer (PAS-00004255). As noted above, the Lister Avenue storm sewer discharges to the Lockwood Avenue outfall.

The television inspection also revealed a connection of unknown origin in the Lockwood Avenue storm sewer 53 feet downstream of manhole LW-3. Inlet connections were also observed 170 feet and 183 feet downstream of LW-3. The pipe at 53 feet connected on the east side and was noted to have possibly been from Atlas. A pipe crossing broken into the crown of the 66-inch line and running perpendicular to it was noted at 201 feet. These pipes were not flowing when televised. A 2-inch connection located approximately 10 feet upstream of manhole LW-2 was observed by City personnel. This connection came from the east side of the street and was discharging flow when observed. This connection appeared to originate at Atlas. Three connections were noted between manholes LW-2 and LW-l in the Lockwood street storm sewer. Pipes were observed 149 feet, 159 feet and 215 feet downstream of manhole LW-2. The connection at 159 feet is believed to be from an inlet that was removed during construction of a new building at Atlas (PAS-00004256-57).

The report concluded that several improvements were required at Atlas including:

- The oil separator should be connected to the sanitary sewer rather than to the storm sewer
- The spillage at the railroad siding should be cleaned up and procedures developed to prevent future spills
- Roof and area drains should be connected to the storm sewer rather than to the sanitary sewer as at present (PAS-00004258).

The plant was noted to have been expanded several times over the years and complete plans of the piping systems were not available. The Lockwood Street storm sewer was located under the sidewalk in front of the Atlas plant. The report notes that connections could have been made without excavation in the street. According to the inspection report, connections of unknown origin between manholes LW-3 and LW-l appear to lead to drains in the Atlas plant complex. The report noted that Atlas should be required to evaluate its piping and identify connections to the storm sewer. Any sanitary facilities, chemical processes or drains that accept polluted flow should be reconnected to the sanitary sewer. Authorized discharges to the storm sewer should be made through a manhole or chamber to allow monitoring by the City (PAS-00004258).

According to a January 8, 2009 Inspection Summary Report for Atlas, during a February 21, 2007, site inspection visit it was observed that the basement floor of the Textile Building (identified as Building 14) required repairs to maintain the impermeability of the concrete. The facility was informed of this in a letter dated March 9, 2007. Atlas Refinery later indicated that the repairs have been completed by removing the existing concrete and pouring a new floor. The site visit conducted on October 2, 2007, found that the new floor was in a different building identified as the Sulpho Department (Building 3). The concrete in the basement of the textile building was found to be in the same condition observed in February. The facility agreed to complete repairs on the concrete floor of the Textile Building basement (PAP-00691082).[16]

Violations

A Stream Pollution Report for the week of July 30 - August 3, 1979, states that Atlas Refinery had an inoperative oil separator that discharged polluting wastewater to "the Lockwood Street storm sewer and the Passaic River." Although this was reported as far back as May 24, 1979, the company had reportedly not taken any action towards replacing or repairing the oil separator. They were directed to re-connect the discharge to the sanitary sewer, but not until the oil separator was in good working condition. The report notes that PVSC will have to take action against this company, beginning with a strong letter from the Chief Engineer informing them of strict penalties for this continued violation (PAS-00008132).

[16] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

An April 1, 1981, letter from the Newark Department of Engineering to PVSC states that the Atlas facility on Lockwood Street was a known source of pollutants entering the Lockwood Street storm sewer. A history of poor housekeeping had left the railroad siding and other land adjacent to the Atlas plant contaminated with oil and other pollutants. A perforated pipe drained the siding area to an oil/water separator. The water fraction was discharged from the separator to the Lockwood Street storm sewer. Despite some improvements in site management over the past few months the quality of the effluent entering the storm sewer had not noticeably improved. The pH was consistently higher than 10 and the effluent was very turbid. The Engineering department felt that the effluent from, the oil/water separator should be directed to the sanitary sewer line and the connection to the storm sewer permanently closed (PAS-00072987).

The Response to Information Request states that Atlas Refinery was cited by the PVSC in March 1989. The reason for this citation was the excess Total Petroleum Hydrocarbon (TPH) presence in the discharged plant effluent (PAS-00051980).

According to a March 8, 1989, Civil Action Complaint filed in the Superior Court of New Jersey, PVSC issued a sewer connection permit to Atlas on December 16, 1986 (PAS-00052009-10). By the complaint, PVSC was requesting that the permit be revoked stating that the petroleum hydrocarbon content control system and other pretreatment systems were functioning improperly. The complaint notes that violations were issued to Atlas on April 28, 1986, October 20, 1986, February 24, 1988, April 8, 1988, May 24, 1988, June 28, 1988, August 3, 1988, September 22, 1988, November 22, 1988, and January 23, 1989 (PAS-00052011-12).

A Civil Action Answer to the above noted Civil Action Complaint states that Atlas did provide continuing analysis of wastewater parameters, that commencing in 1986 after the effective date of 40 CFR 403.12, Atlas installed a Pretreatment System and that Atlas submitted monthly compliance monitoring reports pursuant to PVSC regulations. Atlas alleged that when the oil skimming system it had installed proved unsatisfactory it installed a new State of the Art Pretreatment System that became operations on April 18, 1989 (PAS-00052015-17). The complaint was later dismissed (PAS-00052028).

According to an October 29, 1990 Administrative Order and Notice of Civil Administrative Penalty Assessment, as the result of an investigation conducted on June 13, 1990, NJDEP determined that Atlas constructed, installed, or altered and operated a 3,000 gallon acrylic acid storage tank without obtaining the required permits (PAP-00691073).

According to a January 8, 2009 Inspection Summary Report for Atlas, during a February 21, 2007 site visit, it was found that internal visual inspections of several tanks having capacities greater than 2,000 gallons including a No. 6 fuel oil Tank 4A and a Mineral Oil Tank 68 had not been completed within the past five years. As a result, a Notice of Violation was issued (PAP-00691080).[17]

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Permits

A July 1986 Application for a Sewer Connection Permit states that the following gallons of wastewater were released to the sanitary/combined sewer:

- Sanitary service only: 198,000
- Process Waste Water: 1,516,420
- Cooling Water: 23,030 (PAS-00072965-67).

A 1991 Application for a Sewer Connection Permit states that the following gallons of water were released to the sanitary/combined sewer:

- Sanitary service only: 173,000 (estimated)
- Process Waste Water: 2,541,000
- Cooling Water: 768,000 (estimated) (PAS-00103446-47).

Atlas received PVSC Sewer Connection Permit No. 20402420 on December 16, 1991 with the expiration date of December 16, 1996(PAS-00103464).

The 1994 RCRA inspection noted above, included all manufacturing areas mentioned above including the QA/QC Laboratory where Atlas generated/accumulated one waste stream: Waste ignitable liquid (DOO1) from laboratory extractions using alcohol. This D001 waste was satellite accumulated in a 5-gallon container and when filled was sent to Safety-Kleen in Newark, NJ. Since the DOO1 waste was generated in 5-gallon intervals, Atlas was considered a small quantity generator under N.J.A.C. 7:26-8.3. The D002 waste generated from a one-time operation of cleaning the inside walls of their Sulfuric acid above-ground tank was sent to Northeast Environmental Services in Wampsville, NY (1/13/94). The shipments made on February 1993 were all lab packs from cleaning an old laboratory. Finally, the X900 shipments on 7/1/93 to S&W Waste in Kearny, NJ contained waste castor and other mineral oils from a one-time above-ground storage tank clean-out operation. The tank was removed later and disposed as scrap metal. No violations were found during the inspection (PAS-00103488).

According to a November 26, 1996 inspection, Atlas was operating at that time under NJPDES Permit No. NJ0116904 (PAS-00103500). A May 5, 1997, Renewal states that the original authorization date was September 21, 1993. This renewal was valid until 2002 (PAS-00103519). Annual re-certifications for this permit were filed from 2002 to 2005 (PAS-00103508-15). According to a January 09, 2009 EDR Radius Map Report, NJPDES permit NJG0116904 was active until May 31, 2012 (PAP-00691438).[18]

[18] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- Evaluation of the 80 Lister Avenue 2, 3, 7, 8-Tetrachlorodibenzo-P-Dioxin (TCDD) Data in Conjunction with Available CDC Guidance Documents dated April 10, 1984 (PAS-00125402).
- Phase I Environmental Site Assessment Report dated February 2009 (PAP-00691248).
- Phase II Subsurface Investigation dated July 16, 2009 (PAP-00691299).

An April 10, 1984*, Evaluation of the 80 Lister Avenue 2,3,7,8-Tetrachlorodibenzo-P-Dioxin (TCDD) Data in Conjunction with Available CDC Guidance Documents* prepared for EPA, evaluated analytical data from samples taken in the vicinity of 80 Lister Avenue in conjunction with the CDC document entitled, "Health Implications of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) Contamination of Residential Soil" and previous documents relating to soil contamination at various sites in Missouri. The CDC document states that "residential soil levels greater than 1 ppb TCDD pose a level of concern." It also states that in commercial zones, a "level of concern may not be reached until levels several fold or more above 1 ppb are reached." The term "several fold or more" was interpreted to mean at least 5 to 7 ppb. Atlas Refinery was located in Commercial Zone 4 for this study. Commercial Zone 4 did not have any samples with TCDD concentrations above 5 ppb. No further sampling or remediation was required for the zone. Five of nine soil samples at Atlas Refinery East, End of Lister Avenue showed 0.29, 0.07 (c), 0.2 (c), 0.55 (c), and 0.57 (c) ppb of TCDD. (c) means that the results were corrected for lab bias. The remaining four samples were ND (PAS-00125401, 406, 408, 422, 445, 487-88).

According to a September 1993 Potentially Responsible Parties Summary (author unknown) for Atlas Refinery, sediments in Sample 93, collected at the Lockwood Street storm sewer outfall to the Passaic River, contained significant concentrations of total extractable petroleum hydrocarbons, as well as total PAHs in exceedance of NOAA criteria (PAS-00052129). The summary does not specify by whom and when the sample was collected.

According to a July 16, 2009, Phase II Subsurface Investigation prepared by AEI Consultants, AEI drilled and logged six exterior borings at the property on June 29, 2009 (PAP-00691302). Soil samples were collected and analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (PAP-006391301).

Concentrations in soil sample AEI-B2-4' were naphthalene (0.427 ppm), 2-methylnaphthalene (0.226 ppm), phenanthrene (0.503 ppm), fluoranthene (0.882 ppm), pyrene (0.797 ppm), benzo(a)anthracene (0.509 ppm), chrysene (0.636 ppm), benzo(b)fluoranthene (0.622 ppm) and benzo(k)fluoranthene (0.482 ppm) (PAP-00691304).

Concentrations in soil sample AEI-B3-4' were acenaphthene (0.909 ppm), dibenzofuran (0.374 ppm), fluorine (0.556 ppm),phenanthrene (1.26 ppm), anthracene (0.644 ppm), fluoranthene (2.93 ppm), pyrene (2.86 ppm), benzo(a)anthracene (0.859 ppm), chrysene (1.23 ppm), benzo(b)fluoranthene (0.87 ppm), benzo(k)fluoranthene (0.589 ppm) and benzo(a)pyrene (0.518 ppm). The concentrations of SVOCs in soil were all below their corresponding Non-Residential Direct Contact Soil Cleanup Criteria and the Impact to Groundwater Soil Cleanup Criteria per the NJDEP's Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D) (PAP-00691034).[19]

Remedial Activities

There is no information regarding remedial activities in the available file material.

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

[19] This Report was revised to include documents received on May 22, 2020. The additional documents did not change Atlas Refinery's previous certification.

AUTOMATIC ELECTRO-PLATING CORPORATION

Facility Name, Address and Size: Automatic Electro-Plating Corporation (AEP); 185 Foundry Street, Newark, New Jersey; site acreage not available (PAS-000109628). According to a 1996 New Jersey Manufacturing Directory, AEP had 12 employees and was established in 1960. Sales that year were $500-999K (PAP-00318786-87). In the 2004 Directory, the company had 14 employees and sales of $1.5 – 2M (PAP-00318791).

1. **Business Type:** Electroplating of steel components (PAS-00014386).

2. **Time Period of Ownership/Operations**

   Operator: AEP – 1970-At least 2005 (PAS-00109629; PAP-00318793)
   Owner: Foundry Street Corporation – 1970-Unknown (PAS-00109629; PAS-00114494)

   AEP is a privately held company that has been under the control of the Borriello family since its inception in 1960 (PAS-00109629; PAS-00114482; PAS-00114469). The Foundry Street Corporation serves as the landlord and real estate management company for the facility's real property (PAS-00109566). Foundry Street Corporation was started in 1970 and incorporated in the State of New Jersey as of April 14, 1971 (PAS-00114494; PAS-00109628).

   AEP began operations in Buildings 19, 21 (approx. 17,000 square feet), and 22 of the Foundry Street Complex, a multi-tenant industrial complex, in 1970 (PAS-00109567; PAP-00031785).

3. **Operational History/COC Use and Presence at the Facility**

   According to a 1991 New Jersey Department of Environmental Protection (NJDEP) Memorandum regarding a Responsible Party Investigation, AEP conducted an electroplating operation in Buildings 19, 21 and 22 since April 1971. The company performed nickel and zinc plating which incorporated two automated methods: RACK (metal parts suspended from racks) in Building 21 and BARREL (metal parts placed in a polypropylene barrel) in Building 22. Both procedures involved dipping steel components in the various plating solutions and rinses (PAP-00374593). According to the 1991 “Responsible Party Investigation” report prepared by NJDEP, AEP used materials containing chromium, copper, nickel, silver, zinc and cyanide (PAS-00000228).

   AEP operations consisted of electroplating of steel components with nickel or zinc finishes. Facility processes included electroplating, plating, polishing, anodizing and coloring (PAS-00109568; PAP-00125761). According to the NJDEP 1991 “Responsible Party Investigation” report, metal parts were submerged in either zinc or nickel solutions. The zinc solution consisted of zinc chloride, potassium chloride, and boric acid, while the nickel solution consisted of nickel sulfate, nickel chloride, and boric acid. These operations took place in Buildings 21 and 22 of the Foundry Street Complex. Building 19 is reported to have been used to store dry chemicals. A yard south of Building 19 was used to store acid carboys (PAS-00000192-93).

A 1981 AEP letter states that the average production rate of metal finishing in Building 21 at that time was approximately 25,000 lbs per day with an effluent flow rate of 30,000 gallons per day average. Pollutants listed did not include any COCs (PAS-00073021).

4. Identified COCs

- PCBs (detected)
- Copper (used, detected)
- Lead (detected)
- Mercury (detected)

PCBs

According to the 1991 “Responsible Party Investigation” report, “Elevated levels of VOCs, B/Ns [base/neutrals], PCBs, organic acids, unknown semi volatile compounds and priority pollutant metals (i.e., cadmium, chromium, copper, lead, nickel, zinc)” were detected in a sediment sample collected from the catch basin in July 1990 (PAS-00000227). No information was available regarding the use of PCBs by AEP.

Metals – Copper, Lead and Mercury

According to a 1991 “Responsible Party Investigation” report prepared by NJDEP, an effluent sample collected on December 12, 1979, during "usual electro-plating" operations contained arsenic, cadmium, chromium, copper, lead, nickel, and zinc. (PAS-00000228). There is no information in the available documents regarding the use of lead by AEP.

According to a PVSC *Heavy Metal Source Determination Study*, dated April 1980, documented discharges in the influent to the PVSC system from the AEP facility included copper, lead, and mercury, among other metals (PAS-00114149). There is no information in the available documents regarding the use of mercury by AEP.

According to the 1991 “Responsible Party Investigation” report, a flow diagram submitted by AEP to the PVSC in January 1989 depicts process lines from Buildings 21 and 22 discharging into the drain on the north side of the facility. It is reported that “high concentrations” of arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc were detected in a surface water sample collected from this drain on October 14, 1988. In addition, this drain and the noted sewer line are reported to connect to one another at a catch basin situated near the corner of Building 21. “Elevated levels of VOCs, B/Ns [base/neutrals], PCBs, organic acids, unknown semi volatile compounds and priority pollutant metals (i.e., cadmium, chromium, copper, lead, nickel, zinc)” were detected in a sediment sample collected from the catch basin in July 1990 (PAS-00000227).

According to a memorandum prepared by William F. Cifelli (Mr. Cifelli’s affiliation is unclear based on the available file material), dated August 17, 1994, lead detections associated with AEP were over the “limit” of 0.6 on four occasions in July 1994. Concentrations ranged from 0.84 to 2.24. The concentration units, sample types and locations are not described in the memorandum (PAS-00073023).

It is also noted that according to a “Foundry Street Complex Site Inspection” report prepared by NJDEP, dated November 15, 1990, a material storage area located on the south side of Building 19 appeared to be stained and that “a small area, approximately 2' x 2', appeared to be saturated with oil” near the northwest corner of Building 19 (PAS-00105569). Oil can contain PAHs; however, no sampling information was available.

According to a PVSC 2003-2004 Annual Report, AEP had an average daily flow of 0.005 MGD to the POTW (PAP-00381267).

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP[1].

NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

However, an inspection report for the Foundry Street complex states that Mr. Borriello indicated soil borings made by Sun Chemical indicated the plant was built on fill material consisting of zinc slag. Mr. Borriello stated that zinc mining was once big in New Jersey and attributed zinc and lead contamination on site to the fill material (PAP-00031578). No soil sampling data was available regarding the AEP facility.

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[1]*Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

5. COC Pathways

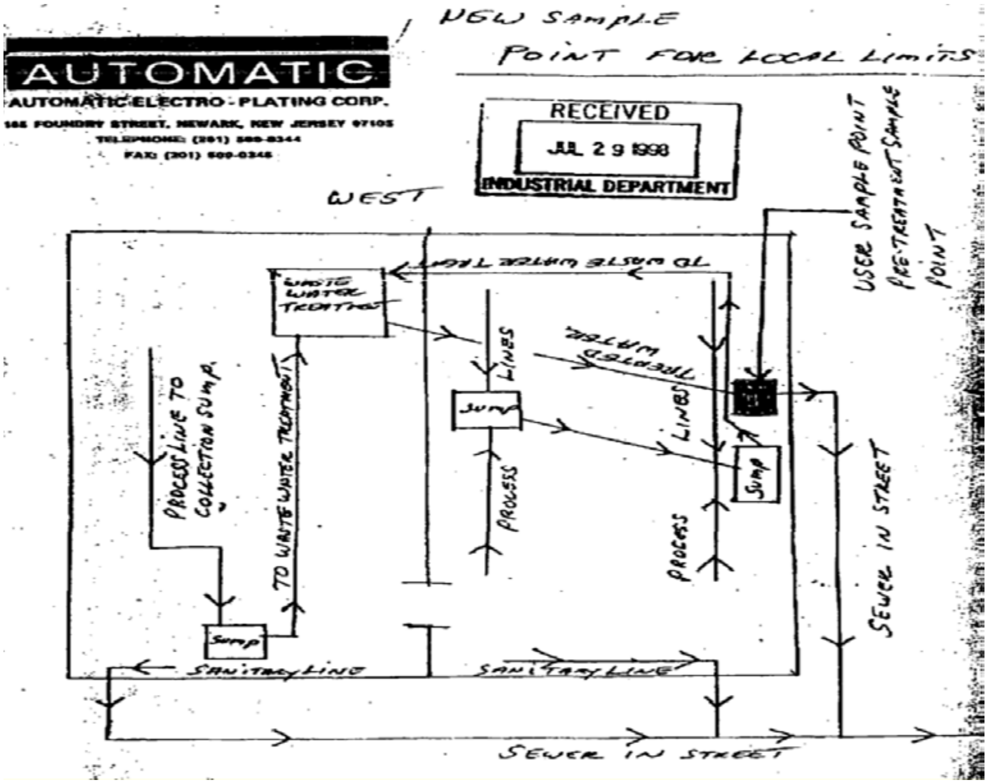
Combined Storm and Sanitary Sewer

According to a memorandum prepared by NJDEP dated April 3, 1991, the AEP facility is part of the Foundry Street Complex. Approximately 30 buildings were situated throughout the complex, separated by narrow driveways which had strip-like drains in the middle of the lane. The drains were connected to an industrial sewer line on Roanoke Avenue and received surface water run-off and industrial discharge from companies in the complex (PAP-00125228).

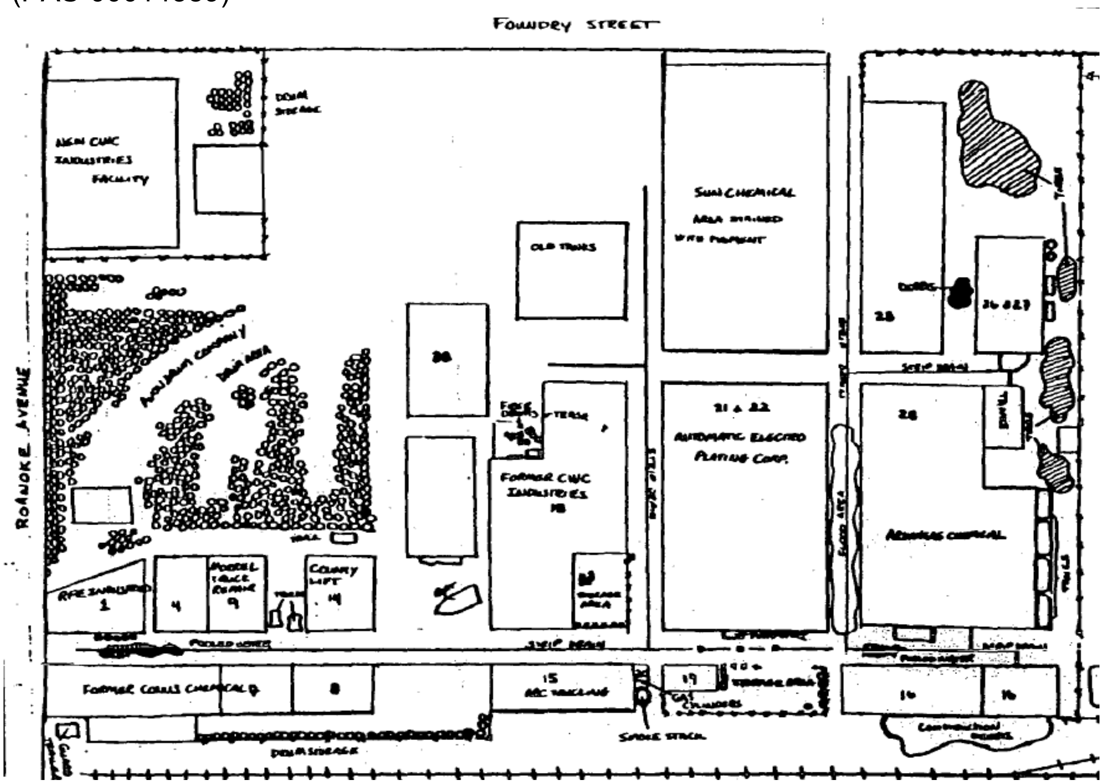
According to PVSC Annual Reports the Roanoke Avenue sewer connects to a sewer on Doremus Avenue, which flows to the PVSC treatment works. There is a combined sewer overflow (CSO) outfall to the Passaic River at the foot of Roanoke Avenue (approximately River Mile 1.1). In 1969, the City of Newark constructed a dam near this CSO to increase flow to the Doremus Avenue sewer, and ultimately, the PVSC treatment works (PAS-00044625-626). It is reported that the Roanoke Avenue combined sewer system and outfall to the Passaic River was documented by PVSC to have been inoperative from 1971 through late 1979, and that discharges of hazardous substances into the sewer system of the Foundry Street Complex would have ultimately discharged directly to the Passaic River via the Roanoke Avenue CSO during periods when it was known to be in a chronic malfunctioning condition (PAS-00109572; PAS-00114295; PAS-00114311; PAS-00114320).

According to the 1991 “Responsible Party Investigation” report, the drainage system at the Foundry Street complex bordered the AEP facility on it north, west and south side and received point source discharge and surface water run-off from AEP. A sewer line on the east side of the Foundry Street Complex was connected to a sanitary source at the AEP facility (PAS-00000227).

Figures depicting discharge lines at AEP (PAS-00014389) and the surrounding Foundry Street Complex (PAS-00114186) are presented below.



(PAS-00014389)



(PAS-00114186)

During a November 1990 site inspection at the Foundry Street Complex conducted by NJDEP, NJDEP observed a series of strip drains outside on both the northern and southern sides of the AEP operation in Buildings 21 and 22. It is reported that the two strip drains appeared to connect to another strip drain located along the western side of AEP's facility. This strip drain, in turn, appeared to be routed through the Foundry Street Complex and towards Roanoke Avenue located to the north of the site (PAS-00109573; PAS-00105573; PAS-00105583; PAS-00114186). Spent plating solution was discharged via two outlets into the outside drains (PAS-00000193).

According to a 1996 AEP Response to Request for Information, substances found in the plating solution(s) were “dragged into the rinse water.” (PAP-00031785). The rinse waters from the plating processes were piped to an on-site collection/sampling pit where the pH was reportedly adjusted, and the treated wastewater was then discharged to the sanitary sewer (PAS-00109570; PAS-00114513; PAP-00125762). In 1979, AEP reported that all wastewater was discharged to the sanitary sewer, and no water was discharged to the “storm sewer, river, or ditch” (PAS-00114408).

In 1978, an investigation by the PVSC determined that the regulator that controlled the diversion of material in the Roanoke Avenue combined sewer overflow (CSO) collection system was broken in the open position. As a result, all material collected in this area, including the effluent discharged by AEP, was bypassed directly to the Passaic River (PAS-00053953).

6. Regulatory History/Enforcement Actions

Inspections/Violations

In a 1980 follow-up investigation by PVSC to assess the extent of heavy metals discharges into the PVSC collection system, AEP was identified as having the following levels of metal contaminants in its effluent to PVSC, described as being its "industrial contribution:

- Copper (0.184 lbs/day - 0.525 mg/kg)
- Lead (0.033 lbs/day - 0.095 mg/kg)
- Mercury (0.0009 lbs/day - 0.002 mg/kg)

(PAS-00109576; PAS-00114149). As noted above, no use of lead or mercury was found in the available records.

An inspection of the Foundry Street complex by the NJDEP in November 1990 revealed that many sections of the drains on the property had collapsed or were broken. These drains reportedly frequently flooded during rainstorms, and their contents would be carried to the Passaic River when the flood waters receded (PAS-00053954).

According to the 1991 "Responsible Party Investigation" report, in January 1986, AEP was found to be "in violation of Sections 307 and 308 of the Clean Water Act, 33 U.S.C. Subsection 1317, and Subsection 1318" (PAS-00000193)[5]. The report also states, "AEP consistently failed to meet electro-plating discharge standards which initiated enforcement actions by the USEPA in 1986" (PAS-00000228). A Civil-Action Suit (86-0920) was filed by USEPA, Region 2, and AEP signed a Consent Decree on April 15, 1987 for settlement of the pending actions (PAS-00000193; PAS-00014392).

A 1995 Response to Request for Information from PVSC to EPA, lists AEP as one of the companies that PVSC had information on "releases, disposal or discharges of hazardous substances into the Passaic River, either directly or indirectly (through, for instance, possible combined sewer overflows)" (PAP-00304314; 18). No additional information was provided.

Permits

AEP held a PVSC Sewer Connection Permit from July 1981 to July 1986 (PAS-00114429). According to a 1991 "Responsible Party Investigation" report prepared by NJDEP, AEP also held a PVSC permit that was effective until July 14, 1991 (PAS-00000193). A permit application shows that AEP applied for a permit in 2001 (PAS-00114450). The application shows sampling in AEP industrial waste as follow: copper (0.02 mg/l), lead (<0.1 mg/l), mercury (0.0004 mg/l) and other metals (PAS-00114456).

According to a PVSC brochure, AEP received a PVSC Permit Compliance Award for 10 years from January 1, 1996 to December 31, 2005, without an effluent evaluation (PAP-00318793).

7. Response Actions

A composite soil sample was obtained from beneath a floor drain in the "process building" located near the area where a sludge material was discovered outside. The sample contained VOCs, B/Ns, and metals below ECRA action levels. The floor drains were determined not to be a source of the sludge through the concentrations detected in the soil sample (PAP-00374594). It is unclear whether "process building" refers to Building 21 or Building 22 and specific concentration were not noted.

In October, 1988, Dames & Moore collected a sediment sample and water sample from the drainage basin situated on the north side of the process building. The sediment sample contained copper at 1,096 mg/kg and lead at 1,044 mg/kg. The water sample contained low levels of lead. The concentration of lead in the water was not noted (PAP-00374594).

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[5] Subsection 1317 pertains to toxic and pre-treatment effluent standards and Subsection 1318 pertains to access to records.

Metals samples were taken in December 1992 and June 1993 from locations in the lower Passaic River adjacent to the "AEP discharge point." Results included the following: (PAS-00053955)

COC	1992		1993	
	Depth	mg/kg	Depth	mg/kg
Lead	Surface	239	Surface	238
	1.83 ft	657	5.33 ft	575
	3.83 ft	385	9.00 ft	669
			12.67 ft	59
Copper	Surface	225	Surface	237
	1.83 ft	460	5.33 ft	683
	3.83 ft	290	9.00 ft	247
			12.67 ft	43

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

BASF CATALYSTS, LLC

Facility Name, Address and Size: BASF Catalysts, LLC ("BASF Catalysts"), 1 West Central Avenue, East Newark, New Jersey, 2.2 acres (PAP-00050552), Block 17, Lot 2 (PAP-00050569). In 2000, the facility (under the name of Engelhard Corporation) employed 70 full-time employees that worked one shift for 286 days per year (PAP-00050569).

In 1990, Engelhard Corporation employed 140 full-time employees that worked one shift for 286 days per year (PAP-00054033), and in 1980, Engelhard Industries Division of Engelhard Minerals & Chemicals Corporation employed 124 full-time employees five days per week (PAP-00054020). In 1975, Hanovia Liquid Gold, Department of Engelhard Industries Division employed 86 people for five days per week for one shift per day (PAP-00054004) and in 1972, Hanovia Liquid Gold, Department of Engelhard Industries Division employed 75 people five days per week for one shift per day (PAP-00050552). Of note, in 1979 the property was located on Block 1571, Lots 2 and 3 (PAP-00054020).

1. **Business Type:** Manufacturer of precious metal coating product-ink, powder, and solution (PAP-00050571).

2. **Time Period of Ownership/Operations**

   Operator: BASF Catalysts, LLC including related entities: since between 1957 and 1960 – May 2009 (PAP-00050629; PAP-00050655)
   Owner: BASF Catalysts-related entities (including Engelhard): May 1957 – May 2009 (PAP-00050655)

1875: The site was developed as part of a mill complex (PAP-00050655).

1899: The oldest portions of the building were originally constructed in 1899 and used as a part of a textile thread mill operated by Clark Thread Company (PAP-00050629; PAP-00050655). Records state it was owned by The Clark Thread Company from 1899 or earlier to 1935 (PAP-00050655; PAP-00050706). The Clark Thread Company is not a predecessor or affiliate of BASF Catalysts (PAP-00050701).

1935: The East Newark Realty Corporation purchased the site in September 1935 (PAP-00050655).

1957: The East Newark Realty Corporation changed its name to East Newark Industrial Center, Incorporated on May 24, 1957 and merged into Baker & Company Incorporated on December 20, 1957 (PAP-00050655).

1960: The aforementioned merged entity was renamed Engelhard Industries, Incorporated (Engelhard Industries, Inc.) on March 31, 1960 (PAP-00050655).

The facility processed precious and non-precious metals producing metal-organic pastes, powders, and solutions that were used in the electronics, electroplating, and glass/china decorating industries (PAP-00050629).

1966: Engelhard Industries, Incorporated changed its name to Engelhard Hanovia, Incorporated on December 31, 1966 (PAP-00050655).

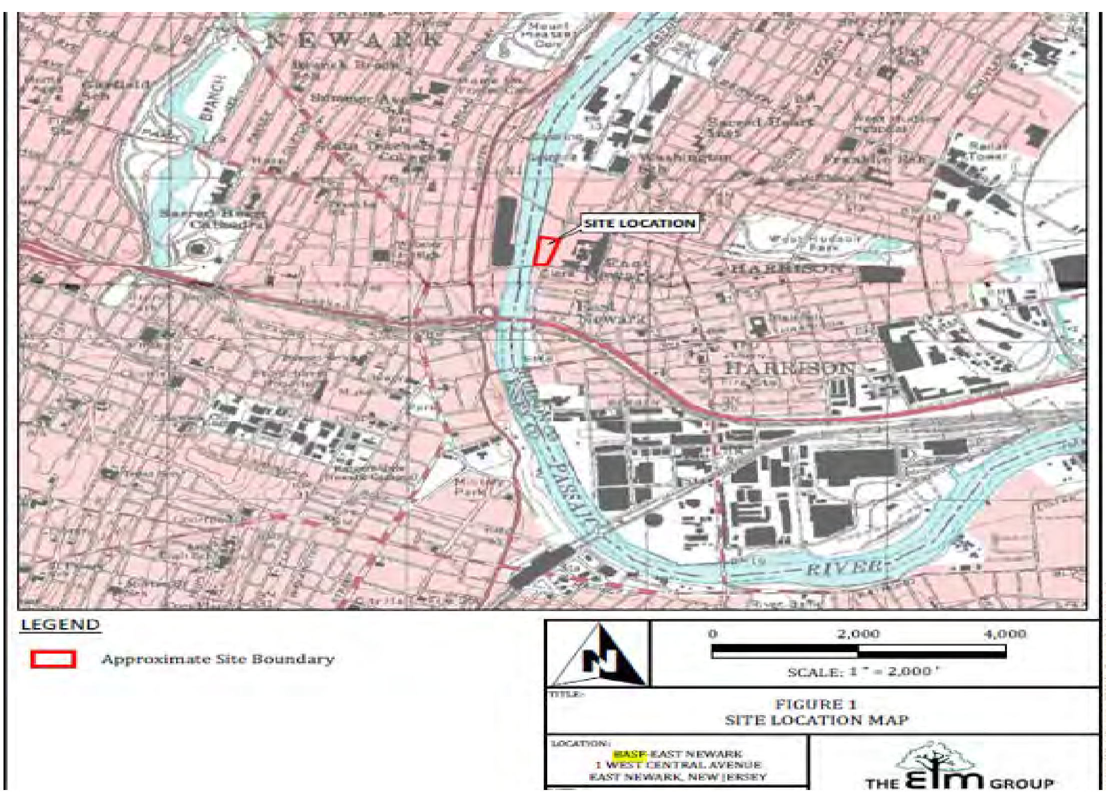
1970: HD Properties, Incorporated acquired the property from Engelhard Hanovia, Incorporated on December 31, 1970 (PAP-00050655).

1971: Engelhard Minerals & Chemicals Corporation acquired the property from HD Properties, Incorporated on April 20, 1971 (PAP-00050655; PAP-00050766).1981: According to a 1990 Site Evaluation Submission, as of 1981 the facility was owned by Engelhard Corporation (PAP-00335905-6).

2006: Through a merger transaction effective June 9, 2006, Engelhard Corporation became a member of the BASF Group. Through several intermediate holding companies, Engelhard Corporation became a wholly owned subsidiary of BASF Corporation (PAS-00050655). On June 9, 2006, BASF Catalysts, LLC acquired the property from Engelhard Minerals & Chemicals Corporation (PAP-00050655). As of August 1, 2006, Engelhard Corporation converted under Delaware law to a limited liability company under the name of BASF Catalysts, LLC (PAS-00129877).

2009: Manufacturing operations ceased in May 2009 (PAP-00050655).

2010: The BASF Catalysts facility was demolished in 2010/2011 (PAP-00050655).

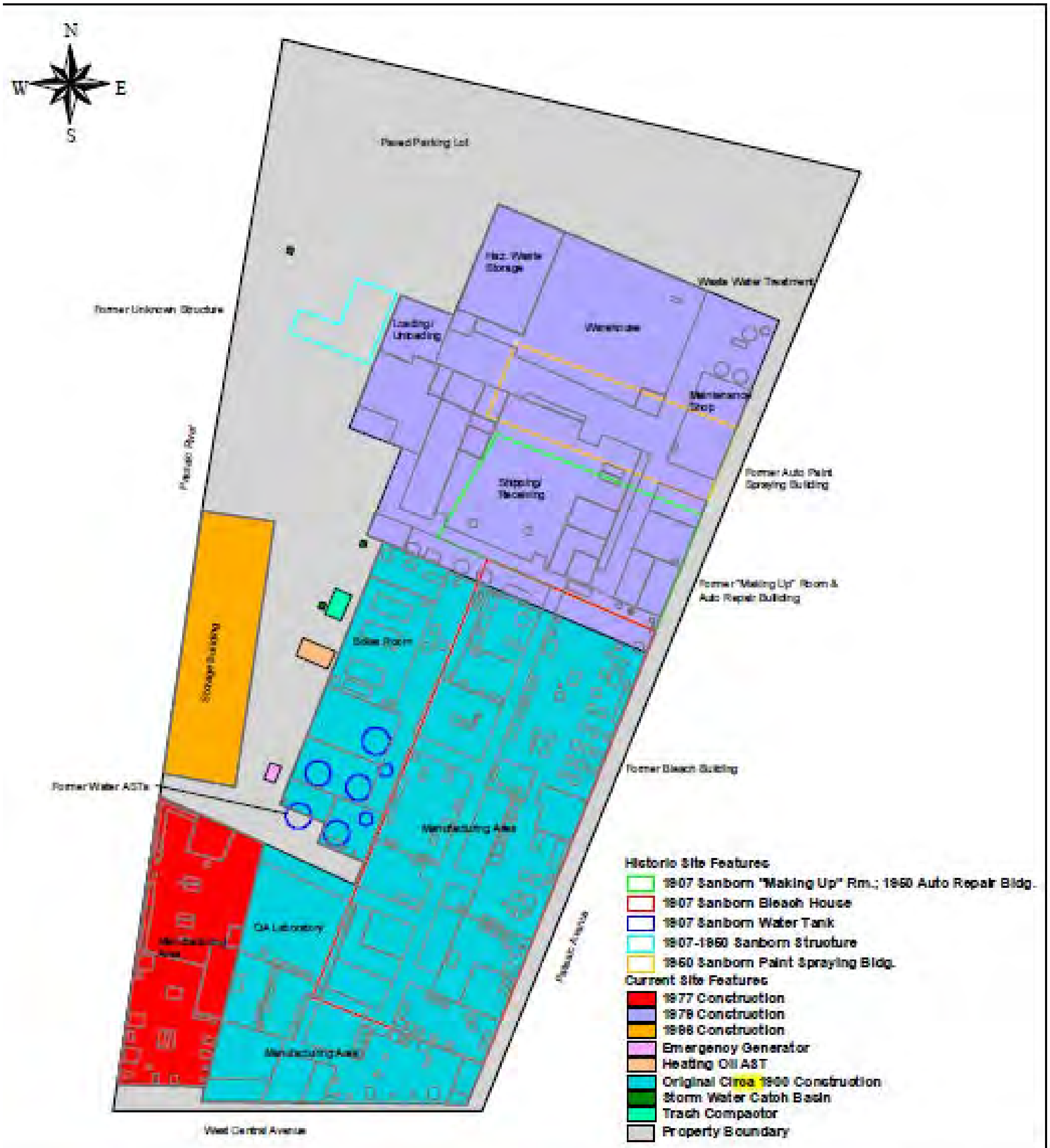


(PAP-00050637)

3. Operational History/COC Use and Presence at the Facility

According to a February 2012 *Industrial Spill Recovery Act (ISRA) Preliminary Assessment/Site Investigation (PA/SI) Report* prepared by Advanced GeoServices Corporation (Advanced GeoServices) for BASF Catalysts, the Clark Thread Company was one of the largest thread mill complexes in the United States. The Clark Thread Company operated at the BASF Catalyst Site from 1899 to 1935 prior to the Engelhard operational period beginning in 1957 (PAP-00050655). The 1907 and 1950 Sanborn Fire Insurance Maps identified structures at the facility that included a bleach house, aboveground water storage tanks and a “make up” building. An auto repair and paint spraying building were also present prior to Engelhard’s expansion of the site (PAP-00050656). According to Sanborn Maps consulted for the 2012 Preliminary Assessment, the bleach house was located on the eastern portion of the property. The “make up” or making up room was to the north of the bleach house and attached to the bleach house. On the 1950 Sanborn Map the making up room was identified as an auto repair building (PAP-00050724). The 1985 Sanborn Map identifies the bleach house as the chemical works building (PAP-00050725).

According to the February 2012 PA/SI, BASF Catalysts, used the same manufacturing processes, chemicals, and raw materials as the Engelhard Industries entities (Engelhard Corporation, Engelhard Minerals & Chemicals Corporation, and Engelhard Industries, Inc.) that operated at the Site before it (PAP-00050658). Beginning between 1957 and 1960, the facility engaged in chemical processing of precious and non-precious metals producing metal-organic pastes, powders, and solutions incorporated into electronics, electroplating, and glass/china decorating industries (PAP-00050701). Products included silver, palladium, gold powder, palladium-silver powder, palladium liquor, palladium yellow salt solution, and palladium powder (PAP-00050701). The majority of the incoming precious metals were typically in elemental form, and chemicals involved in the process were in liquid form. Chemical processing involved dissolving precious metals in inorganic acid solutions or a mixture of several organic compounds. A precipitation of desired components formed, and solutions were filtered, centrifuged, or dried for product recovery. Chemical reactions occurred in kettles and reaction vessels that underwent heating electrically or with steam. Factory operations primarily took place in the central portion of the building including the main reaction operations areas (factory, factory annex, dissolving room). The laboratory was located on the second floor in the central and southern portion of the building (PAP-00050720).



(PAP-00051503)

According to the February 2012 PA/SI Report, Engelhard manufactured all its products in batches typically ranging in volume between one and 200 gallons. Production time for each batch ranged from one hour to three days (PAP-00050720). A Waste Effluent Survey prepared by Paul N. Cheremisinoff, Environmental Control Engineer, dated April 25, 1972, stated Hanovia Liquid Gold, Department of Engelhard Industries Division used

raw materials that included precious metals, organic solvents, essential oils, balsams, resins, sundry chemicals, and acids in manufacturing metallo-organic precious metal coatings at an average of 290 pounds per day. Products from reactors were either filtered, centrifuged, dried, or transported directly to storage for subsequent blending and sale. Small amounts (a few pounds) of miscellaneous products were prepared in small containers, heated, or blended at room temperature. Wastes from the process reactors went to recovery tanks (PAP-00050552). According to the same Waste Effluent Survey, in 1971 the facility purchased a total of 3,528,430 gallons of water of which 3,465,100 gal went to the sanitary sewer. The remaining 63,330 gallons of water were used in product formation, evaporation or were lost (PAP-00050553). A Waste Effluent Survey dated April 24, 1975 for Hanovia Liquid Gold, Department of Engelhard Industries Division prepared by Dr. Walter Drobot, Senior Environmental Engineer, documented an average production of 300 pounds per day of waste effluent; however, the value varied due to the diversified product lines and economic “slow-down” (PAP-00054004).

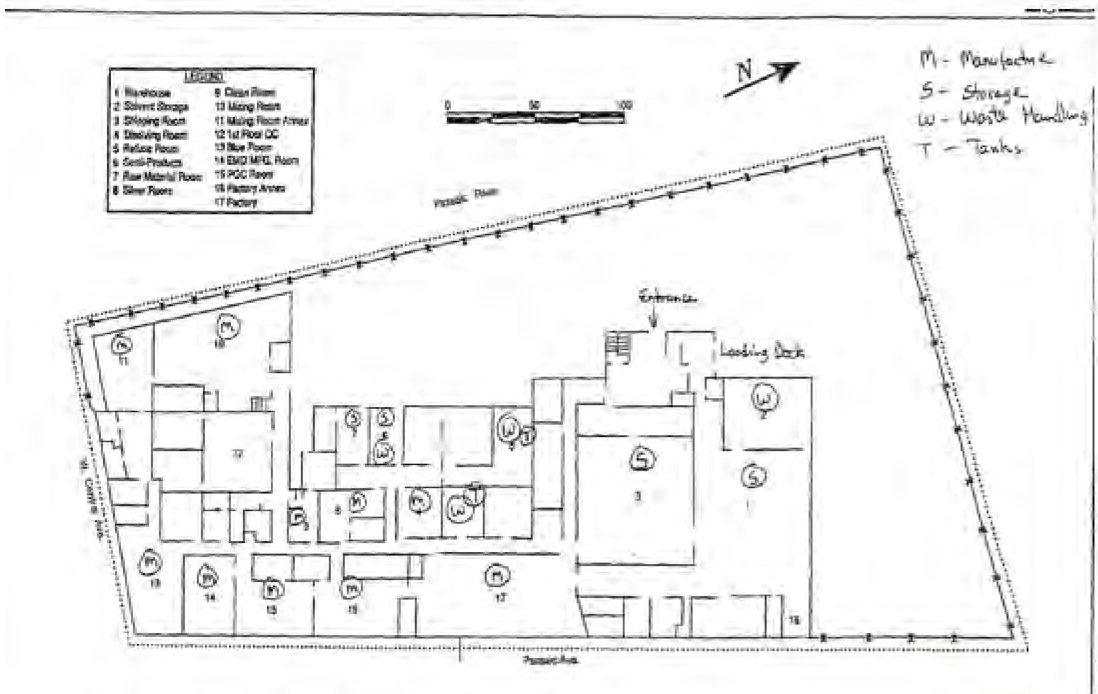
According to the February 2012 PA/SI Report the facility began operating an incineration system in 1983. The permitted incineration system controlled the volume of precious metal refuse, metal losses, and reduced solid waste disposal to off-site landfills (PAP-00050720).

A 1990 *Passaic Valley Sewerage Commissioners Sewer Connection Application for Engelhard Corporation* stated that naphthalene, dieldrin, Dichlorodiphenyltrichloroethane (DDT), Dichlorodiphenyldichloroethylene (DDE), polychlorinated biphenyls (PCBs), and 2,3,7,8-tetrachlordibenzo-p-dioxin (TCDD) were known to be absent from effluent. Metals such as copper, lead, and mercury were suspected to be present (PAP-00054043-44).

Based on a 1991 Community Right to Know Survey, chemicals of concern (COCs) stored on-site 365 days a year included:

- Between 1,001 and 10,000 lbs of inorganic lead compounds in all locations (PAP-00050557; PAP-00050336)
- Between 101 and 1,000 lbs of copper cyanide in locations 1, 14, and 23 (PAP-00050349)
- Between 1,001 and 10,000 lbs of lead chromate in locations 1 and 3 (PAP-00050352)
- Between 11 and 100 lbs of copper in locations 1, 17, and 21 (PAP-00050384)
- Between 11 and 100 lbs of mercury in locations 7, 16, and 17 (PAP-00050407)
- Between 101 and 1,000 lbs of mercuric oxide in locations 1 and 17 (PAP-00050429)
- Between 1 and 100 lbs of lead in location 12 (PAP-00050439)
- Between 11 and 100 lbs of mercuric chloride in all locations (PAP-00050448)
- Between 11 and 100 lbs of cupric nitrate in location 23 (PAP-00050473).

Please see below for locations.



Engelhard Corporation Floor Plan
PAP-00050481

A 1994 *Slug Loadings Control Questionnaire* prepared by Engelhard Corporation described a 40,000 to 50,000 gal/day average daily wastewater discharge flow from the facility between 7AM to 5PM five days per week. There were up to 200 drums of flammable liquids stored in rooms with no drains. The facility had no floor drains, due to the manufacture of precious metal coating products. The form noted that there was minimal to no possibility of releases of copper, lead, or mercury to the sewer from the storage rooms due to no floor drains being in the storage area and an employee training program for emergency response in spill handling and containment (PAP-00050479-80).

A 1997 Community Right to Know Survey covering January 1 through December 31, 1997 states that Engelhard Corporation stored between 1,001 to 10,000 pounds of lead compound mixtures in plastic bottles or jugs 365 days per (PAP-00050557) and between 1,001 and 10,000 pounds of lead/cadmium compound mixtures in plastic bottles or jugs 365 days per year in a warehouse (PAP-00050558).

A more recent description of floor drains at the facility is found in the July 2009 *ISRA Preliminary Assessment* prepared by AMO Environmental Decisions for the New Jersey Department of Environmental Protection (NJDEP) and BASF Corporation. Floor drains and a sump network/drainage system discharged to the Passaic Valley Sewerage Commission (PVSC) publicly owned treatment works (POTW). According to this report, floor drain construction was a seamless trench/drain system built into the concrete floor in the manufacturing area. The manufacturing area had several sumps for collection of process liquid, should spills occur. Process sumps were double-lined within concrete vaults. There were no indications of failed integrity of any drainage systems. The floor

drains connected to sub-floor piping and led to the wastewater treatment area. Sanitary waste water was connected to the waste water treatment area in the northeast corner of the building. It was reported by site personnel that the former waste water discharge lines were replaced by the current system, and were constructed of clay (PAP-00050741).

The July 2009 ISRA Preliminary Assessment noted that hazardous materials were stored on concrete floors in the warehouse area in bins or 55-gallon drums. Drip pans were located by the drum storage racks (PAP-00050743). According to the February 2012 PA/SI, the warehouse, contained numerous floor drains which discharged to the sanitary sewer system. Hazardous wastes were shipped off-site for proper disposal (PAP-00050657).

Hazardous wastes were also stored in 55-gallon containers in an explosion-proof room that had secondary containment and a floor drain. The floor drain discharged to a 275-gallon waste solvent tank (overflow underground storage tank) (PAP-00050657). According to the February 2012 PA/SI, Engelhard Corporation used several techniques to recover precious metals from waste streams, such as containment sumps below the kettles, vessels, and the incineration of still bottoms (PAP-00050658, PAP-00050736). Incinerated solids were sent to BASF's Seneca, SC facility for reclamation of precious metal for reuse at the East Newark facility. (PAP-00050736). Solid wastes not containing precious metal residue were staged in 55-gallon drums in the hazardous waste storage room and sent off-site and disposed of as either hazardous or non-hazardous material. (PAP-00050736).

As for liquid process waste streams, precious metal-containing liquid waste was distilled and chemicals/solvents were separated out (PAP-00050736). The resulting precious metal-bearing sludge was incinerated and sent to BASF's Seneca, SC facility for reclamation of precious metal for reuse at the East Newark facility. The solvent/ chemical liquid that was separated out was stored in 55-gallon drums and staged in the hazardous materials storage room and then sent off-site for proper disposal. (PAP-00050736; PAP-00050721).

Non-contact cooling water and boiler blow down were sent to the on-site wastewater treatment system and then sent to the PVSC POTW under Permit No. 04402500 (PAP-0050736).

When BASF acquired the property from Engelhard Corporation in June 2006, they utilized the same manufacturing processes, chemicals, and raw materials as Engelhard Corporation. Prior to BASF's acquisition of Engelhard Corporation, glass/china decorating processes were discontinued, and BASF reduced operations between them as it transferred processes to other sites in North America (PAP-00050658).

According to the July 2009 ISRA PA, there was one electrical distribution station and four pad-mounted transformers. Three transformers were located in the transformer room along the eastern edge of the building. The fourth transformer was located northeast of the building. All four transformers were owned by PSE&G and reportedly contained no PCBs (PAP-00053852, PAP-00053881). However the 1990 Site Evaluation Submission includes a letter from PSE&G reporting that 2 transformers are PCB-

containing (PAP-00053852, PAP-00053881, PAP-0033574). Three former transformers that were known to exist before the 1979 building expansion and their locations were along the northern portion of the property (PAP-00050743).

The February 2012 PA/SI noted that manufacturing operations ceased in May 2009, and the facility was demolished between 2010 and 2011 (PAP-00050658).

4. Identified COCs

- PCBs (used, detected)
- Dioxins and Furans (precursor detected)
- PAHs (used and detected)
- Copper (stored, used, detected)
- Lead (stored, used, generated)
- Mercury (stored, used, generated)

PCBs

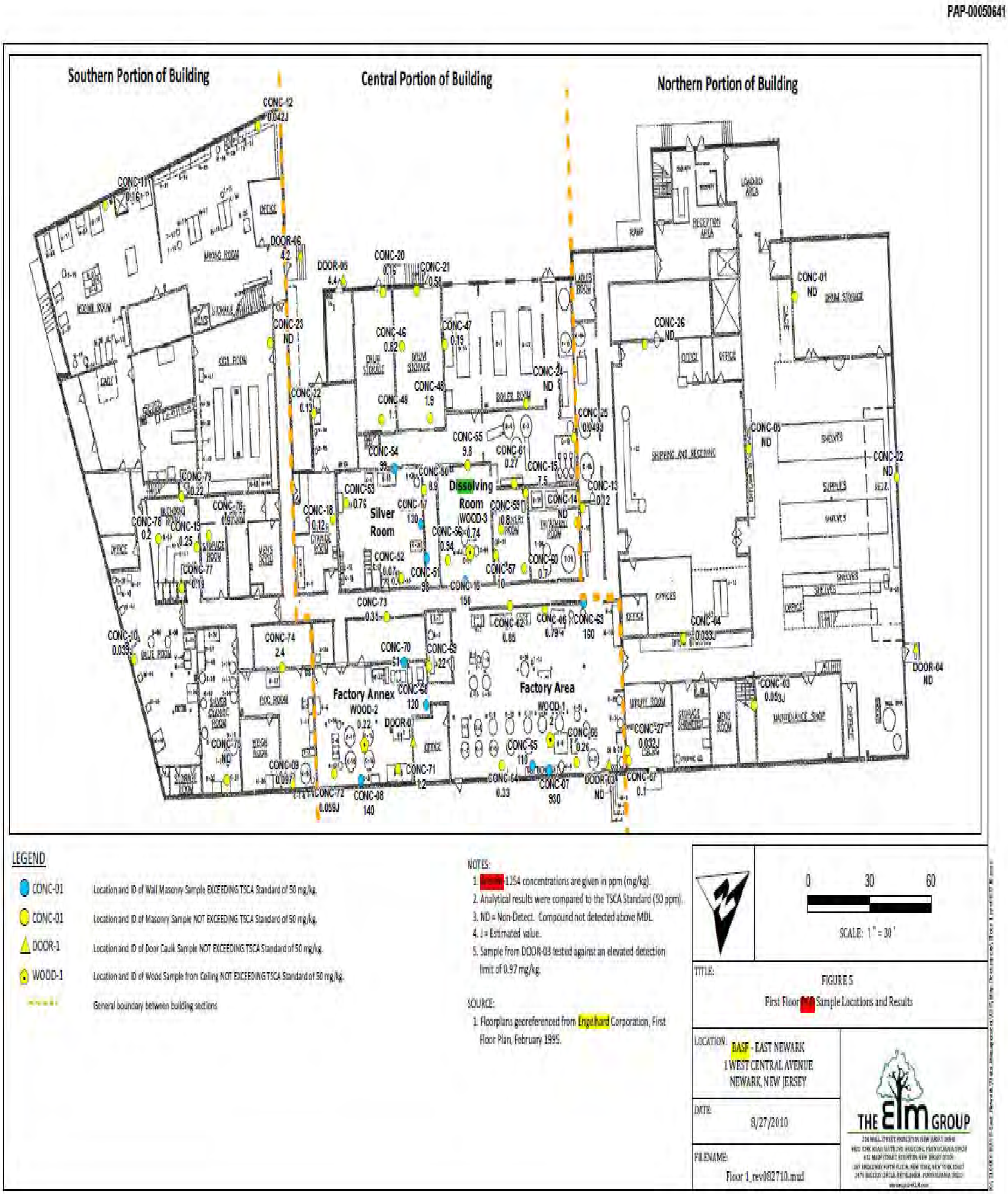
In a letter dated September 24, 2010, the United States Environmental Protection Agency (EPA) was notified that BASF was planning to demolish buildings at the facility down to the existing concrete slabs. During pre-demolition sampling, conducted on June 29 and 30, 2010 with supplemental sampling conducted on August 2, and 13, 2010, PCBs were found at concentrations greater than 50 milligrams per kilogram (mg/kg) in 10 samples from wall materials and I door sample in the original central portion of the building (PAP-00050628, PAP-00050631; PAP-00050637). Samples were collected using a hammer drill and core bits with continuous samples collected to a depth of approximately one inch in accordance with NJDEP guidance. The highest concentrations of PCBs (i.e., greater than 50 milligrams per kilogram (mg/kg)), were found in four rooms in the central portion of the building (i.e., factory, factory annex, silver room and dissolving room) (PAP-00050630; PAP-00050641, 44). The central portion was the oldest part of the facility that housed the most manufacturing. PCBs were detected in other locations, but at concentrations less than 50 mg/kg (PAP-00050631).

According to the 2010 letter, Aroclor-1254 was detected in samples CONC-07, CONC-08, CONC-16, CONC-17, CONC-51, CONC-54, CONC-63, CONC-65, CONC-68, CONC-70, and DOOR-1 at a minimum concentration of 61 mg/kg from sample CONC-70 to a maximum concentration of 930 mg/kg from sample CONC-07(PAP-00050635-636). The map below shows these samples were collected along the east central boundary of the building.

During the February 2012 PA/SI, Advanced GeoServices stated PCB-1254 was detected at 0.83 mg/kg in soil sample B-30 at 1.5 feet below ground surface (bgs) and 0.94 mg/kg in soil sample B-30 at 4.5 feet bgs. Samples were collected on February 10, 2012 (PAP-00050686). The PCB concentrations were detected along the central portion of the building by the eastern boundary (PAP-00050696).

The February 2017 Remedial Investigation Report (RIR) prepared by Advanced GeoServices for BASF recorded 0.61 mg/kg Aroclor-1254 in soil boring B-112 at 1.5 feet

bgs, sampled on June 6, 2013 (PAP-00053921) and 0.78 mg/kg Aroclor-1254 in soil sample B-148 collected at 6 feet bgs sampled on June 14, 2013 (PAP-00053932).

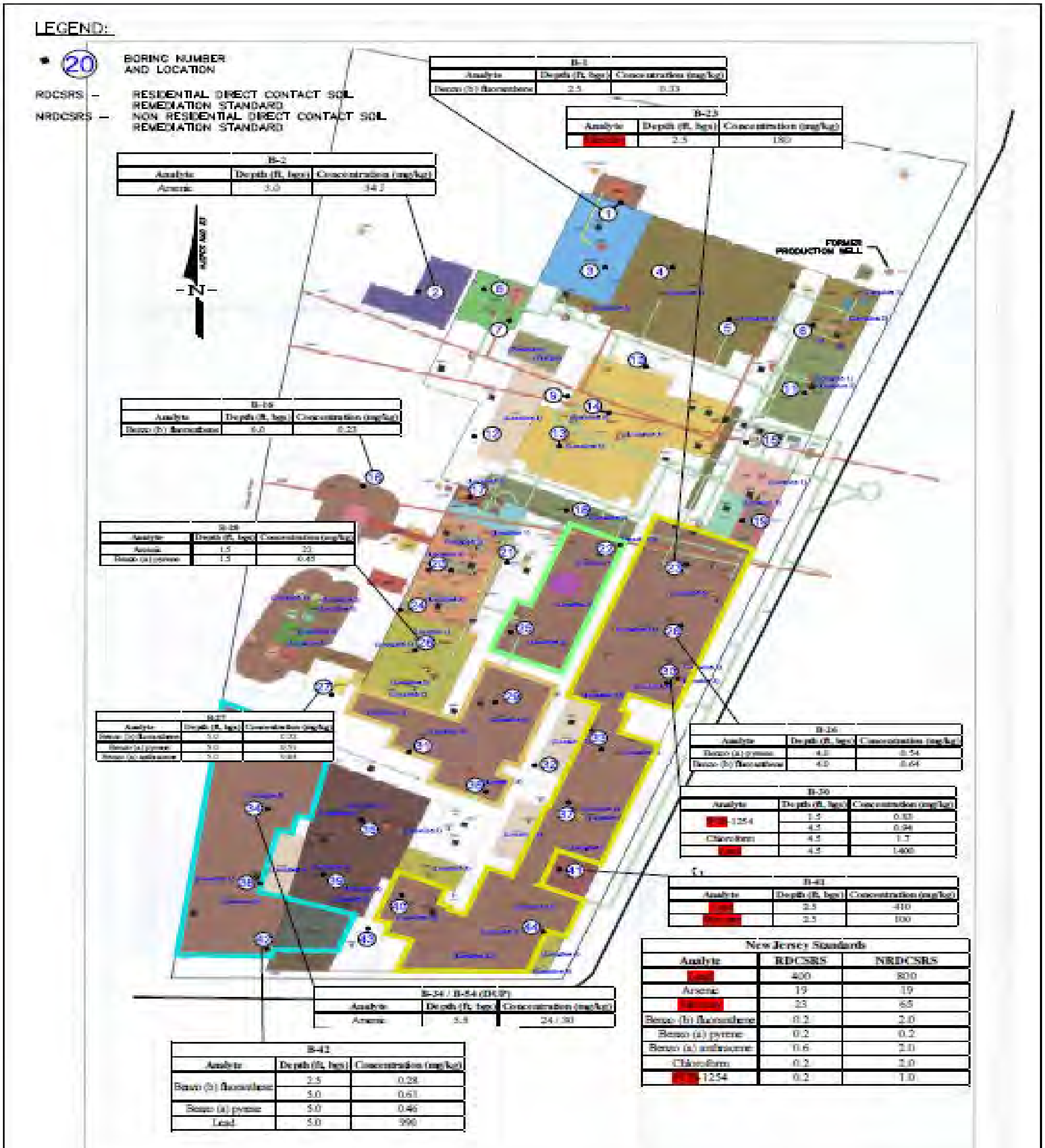


(PAP-00050641)

BASF Catalysts, LLC

Diamond Alkali OU2 Allocation
ADR Confidential
Facility Data Report

PAP-00050696



B-1		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Benzo (b) fluoranthene	2.5	0.33

B-23		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
[illegible]	2.5	180

B-2		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Arsenic	3.0	34.2

B-16		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Benzo (b) fluoranthene	6.0	0.23

B-20		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Arsenic	1.5	23
Benzo (a) pyrene	1.5	0.45

B-27		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Benzo (b) fluoranthene	5.0	0.33
Benzo (a) pyrene	5.0	0.51
Benzo (a) anthracene	5.0	0.61

B-26		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Benzo (a) pyrene	4.0	0.54
Benzo (b) fluoranthene	4.0	0.64

B-30		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
[illegible]-1254	1.5	0.33
	4.5	0.94
Chloroform	4.5	1.7
[illegible]	4.5	1400

B-41		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
[illegible]	2.5	410
[illegible]	2.5	100

New Jersey Standards		
Analyte	RDCSRS	NRDCSRS
[illegible]	400	800
Arsenic	19	19
[illegible]	23	65
Benzo (b) fluoranthene	0.2	2.0
Benzo (a) pyrene	0.2	0.2
Benzo (a) anthracene	0.6	2.0
Chloroform	0.2	2.0
[illegible]-1254	0.2	1.0

B-34 / B-54 (DUP)		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Arsenic	5.5	24 / 30

B-42		
Analyte	Depth (ft. bgs)	Concentration (mg/kg)
Benzo (b) fluoranthene	2.5	0.28
	5.0	0.63
Benzo (a) pyrene	5.0	0.46
Lead	5.0	990

NOTES:
1. BASEMAP OF SITE FEATURES ARE BASED ON FIGURE D-1 (SITE FEATURES MAP) IN THE PRELIMINARY ASSESSMENT PROVIDED BY AMO ENVIRONMENTAL DECISIONS, JULY 2009.

FIGURE 5	BASF CORPORATION EAST NEWARK FACILITY SITE INVESTIGATION EAST NEWARK, NJ	ADVANCED GeoServices	SUMMARY OF EXCEEDANCES OF RDCSRS AND/OR NRDCSRS			
			PROJECT MANAGER:	T.M.L.	SCALE:	N.T.S.
			CHECKED BY:	T.M.L.	PROJECT NUMBER:	20122804
			DRAWN BY:	D.J.S.	DATE:	2/29/2012

(PAP-00050696)

Dioxins and Furans

Sampling for the February 2012 PA/SI identified 0.078 mg/kg dibenzofuran in soil boring B-42 collected at 5 feet bgs on February 9, 2012 in the southwestern portion of the facility (PAP-00050688). Sampling results from 2013 contained in the 2017 RIR showed 0.250 mg/kg dibenzofuran in sample B126 at 4 feet bgs (PAP-00053924); 0.4370 mg/kg in soil sample B-131 at 1.5 feet bgs (PAP-00053926); and 2.410 mg/kg dibenzofuran in soil sample B-143 collected at 6 feet bgs (PAP-00053930). Concentrations of dibenzofuran were detected as low as 0.025 mg/kg as shown in sample B-142 at 6 feet bgs and as high as 2.41 mg/kg in sample B-143 at 6 feet bgs (PAP-00053930).

PAHs

According to the 2012 PA/SI, thread making (pre-BASF Catalysts/Englehard) operations often used aniline dyes that were coal-tar based (PAP-00050663). The 2012 PA/SI found 0.46 mg/kg benzo(a)pyrene in sample B-42 at 5 feet bgs in the southwestern portion of the facility on February 9, 2012 (PAP-00050688).

The February 2012 sampling results found in the February 2017 RIR showed 0.54 mg/g benzo(a)pyrene in soil boring B-26 at 4 feet bgs; and benzo(b)fluoranthene in soil boring B-27 at 0.72 mg/kg collected at 5 feet bgs (PAP-00053909).

The 2013 sampling results found benzo(a)anthracene in soil boring B-106-2 at 4.16 mg/kg; benzo(a)pyrene at 4.09 mg/kg and benzo(b)fluoranthene at 5.76 mg/kg (PAP-00053915). Soil sample B-132 collected at 3 feet bgs contained benzo(a) anthracene at 6.57 mg/kg, benzo(a)pyrene at 6.33 mg/kg and benzo(b)fluoranthene at 9.11 mg/kg (PAP-00053926). Soil sample B-142 collected at 6 feet bgs detected benzo(a)anthracene at 0.6880 mg/kg, benzo(a)pyrene at 0.690 mg/kg and benzo(b)fluoranthene at 0.978 mg/kg (PAP-00053929). Indeno(1,2,3-c,d)pyrene was found at 4.44 mg/kg in soil sample B-143 collected at 6 feet bgs (PAP-00053930).

According to the February 2017 RIR, some of the PAH compounds found in soils could have been generated from on-site incineration; however, there did not appear to have been widespread usage of PAHs. Benzo(a)pyrene was found in the incinerator area in soil sample B-107 at a concentration of 0.34 mg/kg, which is below accepted Historic Fill concentrations (PAP-00053835). According to the RIR, the absence of non-Historic Fill PAHs supports the conclusion that PAHs were Historic Fill related (PAP-00053836).

Copper

Copper was used in the production of precious and non-precious metal coatings and metal salts at the facility (PAP-00050733-34). During the February 2012 PA/SI, copper was detected in site soils at a minimum concentration of 6.2 mg/kg in a soil sample collected from boring B-14 at a depth of 1.5-2 feet bgs to a maximum concentration of 270 mg/kg in soil sample collected from boring B-10 at a depth of 6.5-7.0 feet bgs on February 11, 2012 (PAP-0050682-688).

Please refer to the previous maps for boring locations that show:

- Boring B-10 was located in the north central vicinity
- Boring B-14 was located in central portion of the facility

The February 2017 RIR contained 2012 and 2013 sampling results that showed total copper concentrations as high as 588 mg/kg in soil sample B-124 at 2 feet bgs collected on June 6, 2013 (PAP-00053922) and as low as 7.6 mg/kg in soil sample B-4 collected between 5.5 and 6 feet bgs on February 11, 2012 (PAP-00053905). Figures that showed sampling locations were not included.

Lead

Lead was used as an intermediate in the production of precious and non-precious metal coatings and metal salts at the facility (PAP-00050733-34). Site operators listed the following lead containing raw materials in the facility raw material inventory. (PAP-00051483-96).

- 2004 Lead Compounds – 10,001 – 50,000 lbs
- 2005 Lead Compounds – 1,000 – 9,999 lbs
- 2006 Lead Compounds – 1,000 – 9,999 lbs
- 2007 Lead Compounds – 1,000 – 9,999 lbs
- 2008 Lead Compounds – 1,000 – 9,999 lbs
- 2008 Lead Borosilicate <55 Gal Drum
- 2008 Lead NAP-All <55 Gal Drum
- 2008 Lead Nitrate Crystals <55 Gal Drum
- 2008 Lead Fluoride – <55 Gal Drum
- 2008 Lead Monosilicate – <55 Gal Drum
- 2008 Lead Borate – <55 Gal Drum

The February 2012 PA/SI detected lead at 1,400 mg/kg in soil boring B-30 at 4 to 4.5 feet bgs sampled on February 10, 2012 (PAP-00050686) and 410 mg/kg in soil boring B-41 collected between 2 and 2.5 feet bgs sampled on February 9, 2012 (PAP-00050688). Lead was found as low as 7.4 mg/kg in soil sample B-3 collected between 3 and 3.5 feet bgs sampled on February 8, 2012 (PAP-00050682).

Refer to the previous maps for boring locations that show:

- Boring B-3 was located in the north central portion of the facility
- Boring B-30 was located in the east central portion of the facility

The February 2017 RIR contained 2012 and 2013 sampling results that showed a maximum lead concentration of 530 mg/kg in soil boring B-106 at 6.5 feet bgs collected on May 30, 2013 (PAP-00053916). Figures that showed sampling locations were not included.

Mercury

Mercury was used in small quantities in site operations as a catalyst and as a laboratory reagent in the quality assurance laboratory (PAP-00050733-34, PAP-00051483-96). The facility also reported the use of fluorescent and ultraviolet light bulbs which can contain small amounts of mercury. Waste streams containing mercury were manifested as hazardous waste and disposed at facilities permitted to handle waste streams containing mercury (PAP-00050733-34, PAP-00051483).

Site operators reported in 2008 that there was a less than 55 gallon capacity drum of mercury listed in the Facility raw material inventory (PAP-00051493-96). The following mercury containing waste streams were manifested and disposed of off-site:

- 2004 Spent UV Medium – 90 gal
- 2004 Spent UV Medium – 55 gal
- 2004 Fluorescent Bulbs – 50 lbs
- 2004 Spent UV Medium – 110 gal
- 2005 Waste Mercury – 12 lbs
- 2006 Fluorescent Lamps – 100 lbs
- 2008 Fluorescent Lamps – 55 lbs

The February 2012 PA/SI detected mercury at 100 mg/kg at soil boring B-41 between 2 and 2.5 feet bgs sampled on February 9, 2012 and at 180 mg/kg in soil boring B-23 between 2 and 2.5 feet bgs sampled on February 11, 2012 (PAP-00050685; PAP-00050688). Mercury concentrations were found as low as 0.096 mg/kg in soil sample B-2 collected between 2.5 and 3 feet bgs sampled on February 10, 2012 (PAP-00050682). Refer to the previous maps for boring locations that show:

- Boring B-2 was located in the northeast corner of the facility
- Boring B-23 was located in the east central portion of the facility and
- Boring B-41 was located in the southeast corner of the facility

The February 2017 RIR contained 2013 sampling results that showed mercury at 383 mg/kg in soil boring B-122 at 1.5 feet bgs on June 6, 2013 (PAP-00053921) and 509 mg/kg in soil sample B-148-6D at 6 feet bgs on June 14, 2013 (PAP-00053932). Mercury concentrations were as low as 2.1 mg/kg found in soil sample B-119-6 at 6 feet bgs (PAP-00053921) on May 30, 2013. Figures that showed sampling locations were not included.

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[1]

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below.

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	1,400 mg/kg
Copper	588 mg/kg
Mercury	509 mg/kg
Benzo(a)anthracene	6.57 mg/kg
Benzo(a)pyrene	6.33 mg/kg
Benzo(b)fluoranthene	9.11 mg/kg
Benzo(k)fluoranthene	1.9 mg/kg
Indeno(1,2,3-cd)pyrene	4.4 mg/kg

Subsequent to a 2012 PA/SI, 36 soil borings generally advanced to a level of eight feet revealed 11 samples in exceedance of Residential Direct Contact Soil Remediation Standards (RDCSRS) or Non-Residential Direct Contact Soil Remediation Standards (NDCSRS) (PAP-00050648).

The PA/SI concluded that the site is underlain by variable Historic Fill with minor exceedances in limited locations (PAP-00050649).

Three of the 36 soil borings showed analytes not consistent with Historic Fill, but it was likely that many of the areas of concern (AOCs) would be designated as Historic Fill Areas, except the three soil borings discussed above (PAP-00050649). One exceedance of benzo(b)fluoranthene in soil sample B-16 at the 6–foot depth was attributed to late-1800's flooding event (PAP-00050673).

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

5. COC Pathways

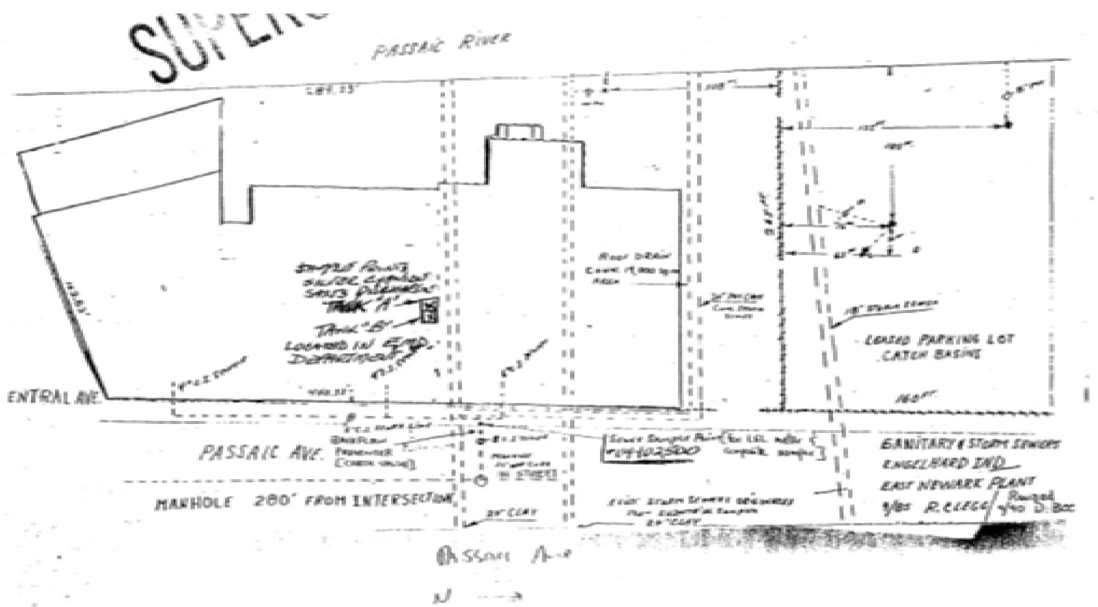
Direct Release

A 1993 NJDEP Communications Center Notification Report documented a spill of metal solvents and metal shavings from a vat, due to sloppy housekeeping at the Engelhard Industries facility. The solvent waste did not enter the water. The spill was reported by Officer Megill of the New Jersey State Police Marine Services Bureau (PAP-00050478). The Passaic River is directly adjacent to the western border of the site, and the site grades from east to west (PAP-00050652). There was nothing recorded about cleanup of the metal solvents.

Sanitary Sewer

A 1972 Waste Survey completed by Paul Cheremisinoff, Environmental Control Engineer showed the facility discharged 182 ug/L a day of copper, less than 10 ug/L per day of lead and 4 ug/L per day of mercury for eight hours a day, five days a week. The facility discharged 14,560 gal per day to the sanitary sewer. The samples were collected from April 5, 1972 to April 13, 1972 (PAP-00054002). A Waste Effluent Survey dated April 24, 1975, stated discharge volume was 27,100 gal per day, eight hours a day for five days a week. Discharged waste to the sanitary sewer was stated as 27,100 gallons of industrial waste per day. Results were based on two 24-hour samples collected on March 18, 1975 and March 20, 1975. The Survey was completed by Dr. Walter Drobot, Senior Environmental Engineer (PAP-00054006).

A 1993 NJDEP Office of Pollution Prevention and Right to Know Release and Pollution Prevention Report states that BASF Catalysts, LLC's average wastewater discharge to PVSC was estimated at 50,000 gal/day – none of which entered a receiving stream or discharged to groundwater (PAP-00050482).



(PAP-00050287)

According to the February 2012 PA/SI, the warehouse area contained numerous floor drains that discharged to the sanitary sewer system (PAP-00050657). Sanitary waste was pH adjusted at the wastewater treatment plant prior to discharge to the PVSC (PAP-00050736). All treated wastewater and sanitary sewage was discharged to the sanitary sewer with eventual discharge to the PVSC for treatment (PAP-00050657). The storm sewer collection system was also connected to the PVSC POTW (PAP-00050741).

Flooding

The site is within a 100-year flood zone. The Passaic River is directly adjacent to the western border of the site and flows to the south. The site grades from east to west (PAP-00050652). There, however, is no documentation on effects of storm surges or excessive precipitation.

6. Regulatory History/Enforcement Actions

Permits

According to the February 2012 PI/SI Report, the facility began an incineration system that produced process steam permitted by NJDEP Bureau of New Source Review, Permit 260002 (PAP-00050657). It is unclear what this permit was issued for, based on review of available files.

PVSC Sewer Connection Permit 04402500 for Engelhard Corporation for discharges at 1 West Central Avenue, East Newark. The permit was effective March 17, 1991 to March 17, 1996 (PAP-00050274; PAP-00054048). According to the permit, the sample point was on the east side of the building discharging to Passaic Avenue, and Engelhard Corporation had a set reporting schedule (PAP-00050278). During the permitting period the effluent was tested and monitored monthly for biological oxygen demand (BOD), total suspended solids (TSS), silver (1 mg/L), and CN- (5 mg/L) and continuously monitored for lower explosive level (LEL) of explosive sewer gas, pH (permit range 5 to 10.5) and for the daily effluent volume discharged (PAP-00050515 ; PAP-00050505-06).

Air Pollution Control Permit to Construct, Install or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment for Engelhard Corporation issued by NJDEP for the Batch Production Plant (APC Plant 10419) (PAP-00054008). The permit included monitoring, recordkeeping, testing, reporting, and inspection requirements (PAP-00054012-14). No information on the expiration of Permit 10419 was available in the referenced documents.

PVSC Sewer Connection Permit 04402500 for Engelhard Corporation at 1 West Central Avenue. The Permit was effective March 17, 1996 to March 17, 2001 (PAP-00050504). Threshold values were set for 0.001 mg/L mercury, 0.092 mg/L copper, and 0.029 mg/L lead. Monthly average discharge limitations were 3.02 mg/L copper, 0.54 mg/L lead, and 0.08 mg/L mercury (PAP-00050507).

Engelhard Corporation applied for a PVSC Sewer Use Permit (Permit 04402500) in September 2000 that documented principal raw materials at the time were gold, silver, platinum, acids, bases, organic solvents, and resins (PAP-00050571). Their industrial waste stream for copper, lead, and mercury were below permit parameters (PAP-00050573). 4,4-DDT, 4,4-DDE and 4,4-DDD were known to be absent from their waste stream, as well as PCBs, dioxins, and furans (PAP-00050579; PAP-00050581).

According to the February 2012 PA/SI, BASF Catalysts, LLC operated under PVSC Wastewater Discharge Permit 04402500. The waste water was pH adjusted prior to being discharged to the PVSC POTW (PAP-00050736). The date of the permit was undocumented.

The following permits pertained to BASF Catalysts, LLC operation between 2006 and 2009 (PAP-00050753):

Permits				
Description	**Permit Number**	**Original Permit Date**	**Expiration Date**	**Issuing Authority**
Sewer Connection Permit	04220003	Unknown*	2/28/06	PVSC
Hazardous Waste (RCRA/EPA)	NJD002141489	Unknown*	NA	USEPA
Physical Connection Permit (well)	0631	3/31/03	NA	NJDEP
General Industrial Permit	NJ0088315	Unknown*	5/31/12	NJDEP
Radiation (QA/QC Equipment)	110690	Unknown*	Annual Renewal	NJDEP
Well Permit	26-5159	1/31/03	NA	NJDEP
Tidelands License	93-0156-T	Unknown*	3/2/09	NJDEP
Hudson Regional Health Commission (air)	0200001	Unknown*	3/30/10	Hudson Regional Health Commission
North American Boiler 150 HI (air)	PCP960001	Unknown*	11/13/09	NJDEP
North American Boiler 200 HP (air)	PCP960003	Unknown*	7/27/09	NJDEP
Batch Permit (air)	PCP96005	Unknown*	6/26/07	NJDEP
Incinerator & York Shipley Waste Heat Boiler HP (air)	PCP960002	Unknown*	5/4/08	NJDEP
Waste Water Vent HP (air)	125374	Unknown*	Unknown	NJDEP

Unable to locate the original permitting date(s).
NA – Not applicable

Inspections and Violations

The 2012 PA/SI documented the following enforcement violations:

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on August 20, 1984 for failure to use process equipment described in the facility air permit. The facility corrected the deficiency and paid an unknown assessment penalty. No further action was needed from NJDEP (PAP-00050754).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on February 27, 1985 for improper use of PCB material. A $6,750 fine was paid and the deficiency corrected. No further action was needed from NJDEP (PAP-00050754).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on December 12, 1986 for an incorrect waste ID; insufficient waste analysis plan; incomplete inspection records; no semi-annual fire drills; and the facility contingency plan was outdated. A $2,900 fine was paid and deficiencies corrected. No further action was needed from NJDEP (PAP-00050754).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on March 24, 1988 for a permit violation because the facility installed and operated 11 pieces of equipment not listed on the permit. A $400 fine was paid and the deficiency was corrected. No further action was needed from NJDEP (PAP-00050754).

The facility received two Administrative Consent Orders – Civil Penalty from NJDEP. The first, on August 1, 1988 because the quantity of hazardous waste was not documented on the manifest. The manifest was corrected and a $300 fine was paid. On November 15, 1988 the facility was found to have an incomplete hazardous waste manifest because the quantity of hazardous waste was omitted. The facility corrected the manifest and paid a $1,125 fine. In both instances, no further action was required by NJDEP (PAP-00050755).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on April 25, 1989 for a permit violation, the facility was found to be using sodium nitrite which was not listed on permit to operate apparatus. Facility stated a typographic error in permit and that sodium nitrite should be on it. Facility paid a $640 fine and no further action was required by NJDEP (PAP-00050755).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on September 12, 1989 for a permit violation for allegedly failing to submit stack testing results by deadline; however, the facility requested a hearing for a stay on the Administrative Order (PAP-00050755).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on September 12, 1989 for a permit violation. Facility allegedly operated process equipment without the use of a scrubber, which was damaged in a fire. Facility requested a hearing for a stay of the administrative Order. Results of hearing concurred that the facility operated appropriately under the given (fire) conditions. No further action was required by NJDEP (PAP-00050755).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on October 3, 1989 for a permit violation. Facility was cited for an emissions failure to the atmosphere. Facility retested emissions and found to be in compliance. Facility paid $5,000 fine. No further action was required by NJDEP (PAP-00050756).

The facility received a warning letter from EPA on November 21, 1989 for improper waste manifest preparation. The facility improperly filled out a hazardous waste manifest sent to the disposal facility. The facility corrected the deficiency. No further action was required by EPA. (PAP-00050756).

The facility received another Administrative Consent Order - Civil Penalty from NJDEP on December 14, 1992 for a permit violation due to an exceedance of carbon monoxide permit limits. The facility ensured the existing policy and procedures associated with emissions would be followed and facility paid a $1,400 fine. No further action was required by NJDEP (PAP-00050756).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on October 13, 1993 for a permit violation, due to a failure to maintain owner's manual near ionizing radiation producing machine and failure to maintain records for testing all safety devices. The facility was fined $2,500, and owner's manual and testing procedures were modified to meet requirements. No further action was required by NJDEP (PAP-00050756).

The facility received a Notice of Prosecution from NJDEP on October 13, 1993 due to a failure to register radiation equipment. Equipment was registered and facility paid a $300 fine. No further action was required by NJDEP (PAP-00050756).

The facility received five Notice of Violations for 1) On October 13, 1993, PVSC found that facility's LEL meter was out of compliance, 2) On October 21, 1993, NJDEP stated a failure to register on-site radiation equipment, 3) On June 13, 1994, NJDEP stated that primary and secondary balsam scrubber were turned off due to leaks in the scrubber and 4) On August 11, 1994, PVSC found that facility's pH control system detected pH levels below 5.0. No further actions was required on any of them (PAP-00050757).

The facility received an Administrative Consent Order – Civil Penalty from NJDEP on August 31, 1994 for a permit violation. The balsam scrubber was turned off during plant operations. A fine was paid and the scrubber was turned on during all operations. No further action was required by NJDEP (PAP-00050757).

The facility received nine Notices of Violation from PVSC and NJDEP (on October 12, 1994, February 22, 1995, July 3, 1995, October 16, 1995, December 8, 1995, April 18, 1996, February 19, 1997, April 25, 1997, June 12, 1997) for pH levels below 5.0 and one Administrative Consent Order – Civil Penalty from NJDEP for the same violation on April 9, 1995. The Administrative Consent Order facilitated the construction of the waste water treatment system. Following correction, no further action was required on any of them (PAP-00050757-59).

In a letter dated August 21, 1996 PVSC advised Engelhard Corporation that a sample of wastewater discharge contained lead 0.56 mg/L, an amount that exceeded local limits. PVSC requested a plan and a timetable to achieve compliance with lead limits within ten days (PAP-00050541-42).

The facility received a Notice of Violation from NJDEP on November 7, 1997 and an Administrative Consent Order - Civil Penalty on December 19, 1997 for exceeding carbon monoxide emission levels from the incinerator. Facility paid a $1,000 fine and corrected the deficiency. No further action was required by NJDEP (PAP-00050759).

The facility received an Administrative Consent Order - Civil Penalty from NJDEP on November 24, 1998 for poor record keeping; radiation monitoring deficiencies; and lack of labeling equipment. A $2,500 fine was paid and requirements met. No further action was required by NJDEP (PAP-00050759).

An Administrative Consent Order – Civil Penalty was issued by NJDEP on September 18, 2002 for failure to conduct a fourth quarter cylinder gas audit. All subsequent audits were performed at appropriate times, no further action was required by NJDEP (PAP-00050760).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- Wastewater Sampling Study (PAP-00050546).
- Notification of Self Implementing PCB Cleanup (PAP-00050628).
- Site Evaluation Submission (October 1990) (PAP-00335904)
- Preliminary Assessment/Site Investigation Report (February 29, 2012) (PAP-00050645).
- Remedial Investigation Report, (February 24, 2017) (PAP-00053810).

Sewer

In response to a 1996 PVSC request for a determination of compliance, Engelhard Corporation conducted a five month sampling program to determine whether they could meet copper, lead, mercury, molybdenum, nickel, and zinc permit parameters effective July 1, 1997. Samples of well, wastewater and city water were collected three times a week on average by Engelhard Corporation. Samples were sent to the Engelhard Carteret Laboratory. Samples of the well and city water served as background to assess contamination from other sources. The Engelhard Carteret Laboratory identified no exceedances of the new permit limits. Therefore, continued sample analysis was sent to an outside-certified laboratory, Townley Laboratories (PAP-00050547). Well water did not show any permit exceedances for the OU2 COCs. PVSC collected samples that were analyzed by three laboratories for metals and gold. Split samples were sent to Townley Laboratories. The results stated that Engelhard could meet new permit limits, and that additional pretreatment of wastewater was unnecessary (PAP-00050548-49).

Remedial Activities

The Remedial Investigation Report dated February 24, 2017, stated that at the majority of the areas of concern (AOCs), constituents detected were related to site wide Historic Fill present to a nominal depth of 7.5 feet and deeper in some areas (PAP-00053811). In some cases, low levels of contaminants that were observed within a specific AOC did not appear to be related to releases associated with the AOC in which they were found, rather, attributed to site-wide conditions or conditions that resulted in contamination across several AOCs. In general, few AOCs were identified to have impacts related to specific past operations within the AOC (PAP-00053861). Much of the operating history, the facility recovered and processed precious metals. Extreme care was taken to avoid any discharges of waste containing these metals (PAP-00053861). With the buildings removed in 2010/2011, security fencing surround the site that is generally covered with seeded clean fill and topsoil. The floors and foundations were removed in 2013 (PAP-00053812). Eight soil borings served to characterize the nature and extent of Historic Fill that resulted in concluding that PCBs were not part of the imported fill (PAP-00053831). 137 soil borings were completed between May 2013 and November 2015 for the RIR (PAP-00053826). The deepest exceedances of PCBs at 10 feet bgs would be addressed with a deed restriction that designated the restricted area on-site to a depth of 10 feet (PAP-00053852).

Approximately 650 tons of certified clean fill was used to backfill underground storage tank excavations. A Classified Exception Area was proposed to address arsenic exceedance (PAP-00053894). Maps of soil boring locations were not included in this report.

At the time of the February 29, 2012 report, the buildings were demolished and building slabs and subsurface piping networks remained beneath the slabs (PAP-00050652). The only significant previous remediation reported was related to underground storage tank (USTs) removals conducted in the 1990's. The effort received no further action status from NJDEP (PAP-00050659). Sampling involved 36 soil borings (PAP-00050648), 11 of which contained exceedances of RDCSRS or NRDCSRS. Most of the exceedances were semi volatile organic compounds, lead, or arsenic that were within the range (and typically lower than the average) of the Historic Fill Database values (PAP-00050648). Three soil borings contained PCB-1254 or mercury above RDCSRS and NRDCSRS, and these areas were to be more fully delineated during the remedial investigation (PAP-00050648-76).

In a letter dated September 24, 2010, BASF Corporation through the ELM Group notified the EPA that it was planning to demolish their facility. During pre-demolition sampling, PCBs were found at concentrations greater than 50 mg/kg in core samples from wall materials in the original central portion of the building (PAP-00050628). In the letter, ELM explained its Self-Implementing PCB Cleanup and proposed disposing of walls containing greater than 50 mg/kg PCBs at a landfill permitted to accept materials with greater than 50 mg/kg PCBs. The remainder of the material would be disposed of at a municipal solid waste facility (PAP-00050632).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

BASF Corporation

Facility Name, Address and Size: BASF Corporation (BASF); 50 Central Avenue, Kearny, New Jersey; 27 acres (PAP-00057982); located on Tax Block 288, Lots 1, 2, and 3 (PAP-00058123); 190 employees, seven days a week for three shifts a day in 1972 (PAP-00058129); 189 employees in 1981 and 154 employees in 1982 (PAP-00058577); approximately 140 employees in 1990 at the time of the site's closure (PAP-00057886); BASF acquired the company that previously owned/operated the site, United Cork Companies, in 1964 (PAP-00062138).

1. **Business Type:** BASF Manufactured phthalic anhydride (PA), organic dyestuffs, polymerized acrylic dispersions and a range of plasticizers (PAP-00057886; PAP-00058129).

2. **Time Period of Ownership/Operations**

Operator: 1936-1990
Owner: 1936-2008

1920s: Property has a history of industrial use dating back to the early 1870s (PAP-00057781). The site was a sawmill operation in 1882 (PAP-00057933). Lumbering operations ceased in the early 1900s. Following cessation of the lumbering operations, the site was purchased and operated by Boston Excelsior in the early 1900s and later by the American Splint Companies, until the 1920s (PAP-00057781).

The property was seized by the Town of Kearny and used for county storage. While serving as a storage facility, most of the American Splint Company structures on the western end burned down. During the late 19th and early 20th century, the eastern portion of the southern tip was a landfill with the intention to raise the level of the property to the same level as the western portion (PAP-00057782).

1936: The United Cork Companies purchased Lot 3 of Block 288 (parcel 3) on June 8, 1936 from Boston Excelsior (PAP-00062133).

1947: On May 29, 1947, United Cork Companies purchased Lot 2 of Block 288 (parcel 2) (PAP-00062133).

1957: On June 12, 1957, BASF Aktiengesellschaft (BASF AG), a German corporation, acquired all outstanding shares of capital stock of Putnam Chemicals Corporation and changed the name of the company to BASF Colors and Chemicals, Inc. (PAP-00062138).

1964: BASF Colors and Chemicals, Inc. purchased the eastern portion of the site from United Cork Companies and the western half of the site by 1964, and a third portion (the lower southwestern portion) in 1968 (PAP-00057782; PAP-

00062127). On January 4, 1964, BASF AG acquired all outstanding shares of capital stock of United Cork Companies (PAP-00062138).

1966: On June 8, 1966, United Cork Companies changed their name to Badische Products Corporation (PAS-00054024-25). Badische Products Corporation began production of dyestuffs, such as Basacryl dyes in powder form at the property in 1966 (PAP-00057933). During 1966, a Dispersion Plant became operational (PAP-00057933).

1968: Effective January 1, 1968, BASF Colors and Chemicals, Inc. and Badische Products Corporation merged, and the surviving entity was renamed BASF Corporation (a New York corporation) (PAP-00062138). BASF Corporation was a wholly owned subsidiary of BASF AG (PAS-00054406). On December 19, 1968, BASF purchased Lot 1 of Block 288 (parcel 1) (PAP-00062127).

1969: In 1969, BASF AG acquired controlling interest in the outstanding shares of capital stock of Wyandotte Chemicals Corporation (PAP-00062138).

1970 In December 1970, BASF merged into Wyandotte Chemicals Corporation. The name of the surviving corporation was changed to BASF Wyandotte Corporation (PAP-00062138).

1971: In late 1971, a Phthalic Anhydride (PA) Plant and Dioctylphthalate Plant each became operational at the site (PAP-00057933). The facility manufactured an annual average of 130 million pounds per year of PA, organic dyestuffs, plasticizers, and polymerized acrylic dispersions (PAP-00058129).

1973: Production of Palanil dyes began in 1973 (PAP-00057933). At this time, the primary wastewater pretreatment (WPT) facility was built to handle process wastewater from the Palanil process (i.e., pH, solids, and color) (PAS-00054144).

1976: In February 1976, dispersions operations ceased (PAP-00057933).

1978: The Basacryl dye plant was shut down in March 1978 (PAP-00057933).

1980: Abandoned operation buildings used for the dispersions operations and the Basacryl dye operations were demolished by February 1980. Construction of a Batch Plasticizer Plant began in February 1980, with start-up in October 1981. Palanil dye operations were suspended in May 1981 (PAP-00057933).

1981: On December 30, 1981, BASF Wyandotte Corporation conveyed the Kearny site, i.e. parcels 1, 2, and 3 to Badische Corporation , also a subsidiary of BASF AG (PAP-00062127-28; PAS-00054039). According to a Town of Kearny deed search, between 1982 and 1987, the facility was simultaneously referred to as the Badische Corporation (Dow Chemical), and in 1985 the site was referred to as the BASF Corporation (PAP-00057783).

1985: A *Dun & Bradstreet (D&B) Report*, dated January 26, 1996 (D& B Report) on BASF Corporation stated that in December 1985 several subsidiaries of BASF AG, including Badische Corporation, BASF Systems Corporation, BASF Wyandotte Corporation, and Inmont Corporation merged, with the surviving entity being named BASF Corporation. At the same time, the company received, through a direct transfer ownership from the parent, BASF Structural Materials, Inc. (PAS-00054039). The D&B Report stated that the BASF Corporation is a BASFIN Corporation subsidiary who is a wholly owned subsidiary of BASF AG (the BASF Group) that started in Ludwigshafen, Germany in 1865 (PAS-00054042).

1986: In mid-1986, a facility to flake molten PA was brought online (PAP-00057933).

1988: In 1988, the site had three manufacturing plants and a facility to flake molten PA (PAP-00057934). *A Supplemental Information Report for 1989*, dated September 19, 1990 documented that in 1989 BASF produced 2,792,000 pounds of bis(2-ethylhexyl)adipate (PAP-00061014); 89,877,000 pounds of di(2-ethylhexyl)phthalate (PAP-00061020); 5,996,000 pounds of di-n-butyl phthalate (PAP-00061024); and, 99,000,000 pounds of PA (PAP-00061031).

1990: According to a *General Information Submission*, dated June 11, 1990, BASF notified New Jersey Department of Environmental Protection (NJDEP) they planned to cease production by the end of that year. No sale was planned (PAP-00057882-4). All production activities were discontinued by the end of September 1990 (PAP-00060089).

1991: In December 1991, NJDEP informed BASF that they have concluded that BASF had appropriately closed all hazardous waste units and that BASF was delisted to generator status only (PAP-00060278).

1992: In December 1992, decommissioning of the facility was completed (PAS-00054149).

1995: The facility was completely dismantled by October 1995, and the site existed as a secure, 27-acre parcel with no buildings, except for the front guard house (PAS-00054149).

2008: Ownership of the property was transferred to HP Real Estate, LLC, a redevelopment company. HP Real Estate, LLC received approval to develop the property into a warehousing and distribution center from Kearny Point, LLC, the entity that has municipal and state approvals (PAP-00061591).

3. Operational History/COC Use and Presence at the Facility

Between 1936 and 1964 United Cork Companies operated the facility (PAP-00182826). During operations by United Cork Companies, “cork waste” from production of stoppers, bungs, gaskets, bottle cap discs, and similar material was used to form cork blocks and sheets for use as flooring, insulators against heat, and for absorbing vibrations in

machinery (PAP-00058672). According to patent #2,041,377, dated December 5, 1935, this process superheated the cork particles with steam to use the natural resins in the cork to bind the particles together (PAP-00058672-74).

An article in *The New York Times,* dated April 12, 1956, announced United Cork Companies had obtained a license to use the BASF AG. process for making polystyrene plastic foam and molding the material into finished products. The foam was molded under heat from polystyrene "beads" resembling coarse grains of sugar (PAP-00065199). The facility was used to produce expanded polystyrene insulation in 1965 and 1966 by United Cork Companies (PAS-00053995-96; PAS-00053997-99) and in 1967 and 1968 by Badische Products Corporation (PAS-00054000-03). In 1964, BASF AG acquired the physical assets of the United Cork Companies and in 1966 Badische Products Corporation began production of Basacryl dyestuffs, and later added dyes, plasticizers, and PA (PAP-00057933).

PA and benzaldehyde were process chemicals handled by BASF at the facility that were classified as Class III organic compounds (PAP-00182826; PAS-00054145, 52, 92). The United States Environmental Protection Agency (EPA) publication *Dioxins: Volume III, Assessment of Dioxin-Forming Chemical Processes*, dated June 1980, identifies Class III organic compounds as those with the possibility, but less likely, of dioxin formation (PAP-00169111).

According to documents contained in BASF's *ECRA Site Evaluation Submission SES*, dated August 3, 1990, between approximately 1966 and 1977, the Basacryl plant manufactured water based or solvent based cationic acrylic dyes, and water based dispersions for methacrylate and acrylate chlorides (PAP-00057783). A list of raw materials and products is presented below (PAS-00054152-53):

BASF CORPORATION
Kearny, New Jersey

BASACRYL PLANT

Raw Materials and Products

A AMINO ACETANILIDE
ACETIC ACID GLACIAL
ACETOXY ETHYL ETHYL ANILINE
ACETOXYLINE
ACRIDYLIC ACID
ALBIGEN A
ALLYLNITRILINE
ALPHA AMINO ANTHRAQUINONE
ALUMINUM PDR ST 30
AMINO-PHE-HYD-ANTHRAQUINONE
ANTHRANILIC ACID DRY
AQUA AMMONIA
ASTRA N FUCHSIN CONC.
BASOLON B PDR.
BASOPHEN RBD = TENSACTOL A
BASOPHOR FJ
BASOPHOR OU
BASOTOL
BASOWET BX DRY
BENZALDEHYDE
BENZIMID
BETA NAPHTOL
BOHRMITTEL HOECHST
BORIC 100%
BROMINE
BUTYL-CYANOETHYL-ANILINE
CHLORANIL
CHLORINE
CHLOROSULFONIC ACID
CHROMOXIDE EX WET
CYANO ETH OXETH ANIL BENZOATE
CYANO ETHYL ETHYL ANILINE
CYANO ETHYL ETHYL M TOLUIDINE
CYETH ETHCARB OXETH ANILINE R
DEKOL N
DI PROPYLENE GLYCOL
DIBENZANTHRONE DRY
DICHINYL C
M-NITROANILINE
N N ACETOXY ETHYL AMINO A A
NEKAL 73 U
NITRA ACID AMIDE
NITRO DIAZOXYL ACID
NITROFORMALID PDR. @ 100%
NITROSYL SULFURIC ACID 40%
N-DIMETHYL ANILINE
N-DI-ETHYL ANILINE

N-ETHYL-O-TOLUIDINE
N-MONO METHYL ANILINE
OXTYL AMID MOIST @ 100%
OCTYLAMID PST
OLEUM 24%
OXETHYLNITRILINE @ 100%
OXETHYLNITRILINE
OXY ETHYL ETHYL ANILINE
OXYANTHRAQUINONE MIX
OXYQUINALDINE CARBOXYLIC ACID
PARA CHLORO META CRESOL
PARA CRESOL
PARA FORMALDEHYDE
PARA NITRO ANILINE
PARA NITROANILINE -O METHYL SULFONE
PYRIDINE
PHENOL CRYST 100%
PHOSPHORIC ACID 83-85
PHTHALIC ACID ANHY FLAKE
PHTHALIC ACID ANHYDRIDE = PAA
PLURACOL E-400
PLURACOL E-600
POTASSIUM CARBONATE
POTASSIUM HYDROXIDE
PROPIONIC ACID
PROPYLENE GLYCOL
2 AMINO 6 NITRO BENZO THIAZOLE
2 ANISID W METHAN AC PST (R)
2-AMINOBENZONITRIL
2-AMINO-5-NITROBENZONITRIL
2-CHLORO-4-NITROANILINE
2-CHLORO-4-NITRO-6-BROMO ANILINE
2.4 DINITRO 6 BROMO ANILINE
2.5 DICHLOROSULFANILIC ACID

DIHYDROBIBENZOTETR IRON COMPLEX
DIOXETHYL-META-CHLORO-ANILINE
DISINFECTION SOLUTION 73 U
DISPERSING AGENT SS EXTRA PDR.
DISPERSING AGENT SSP PDR.
DRY ICE
EKTASOLVE DB
EMULPHOR ON 870
ETHYL ANILINE ESTER @ 100%
ETHYL ANILINE ESTER
ETHYL NITRILINE
ETHYLENE GLYCOL
ETINGAL A
FOAMMASTER V
FORMIC ACID
GELB PYRIDONE @ 100%
GELB PYRIDONE
GLYCERINE
HEXANDIOL-1.6
HYDRAZON
HYDROCHLORIC ACID 31%
HYDROGEN PEROXIDE 35%
IGEPON T-77
INDANTHRENE BLUE RS
INDANTHRENE BLUE RS GROUND
INDIGO PU POWDER KN (DRUMS)
INDIGO 75 POWDER @ 100% (BINS)
ISOBUTANOL
LIGNOSOL FTA
LIPAMIN OK
LOMAR PW
MANGANESE DIOXIDE
METHANOL
METHYL CARBITOL
METHYL PYROLIDONE SOLN.
METHYL QUINOLONE
MONO ETHYLENE GLYCOLDIACETATE
M-CRESOL
RABTEX OIL
REAX 85 A
SELLOGEN H.R.
SODIUM ACETATE
SODIUM BICARBONATE
SODIUM BISULFITE
SODIUM BROMIDE
SODIUM CARBONATE
SODIUM CHLORIDE

SODIUM CYANIDE
SODIUM FORMATE
SODIUM HYDROSULFITE
SODIUM HYDROXID 50% SOLN. 100%
SODIUM HYPOCHLORITE
SODIUM NITRITE CRYST.
SODIUM NITRITE SOLN @ 100%
SODIUM SULFATE
SODIUM SULFITE ANHYDROUS
SORBITOL LIQUID
SOYA LECITHIN CONC. W
SULFAMIC ACID
SULFUR MILLED
SULFURIC ACID 93-98%
SULFURIC ACID 98%
SURFYNOL 104H
TAMOL NNOK
TAMOL NNOK SA
TAMOL SN
TETRONIC 1504
TETRONIC 904
TRIBUTYL PHOSPHATE
UREA
ZEWA POWDER MGF
2 AMINO 5 NITRO BENZONITRILE
2 AMINO 5.6 DICHLORO BENZOTHIAZOLE
2.6 DICHLORO 4 NITROANILINE
2.6-DIBROMO-P-NITROANILINE
3 ETHOXY PROPYLAMINE
3-ETHYL AMINO P CRESOL
3-METHOXY PROPYLAMINE
3-(BIS ACETOXETHYL) AMINO 4 MAA
5 NITRO ANTHRANILIC A THIOAMID

Batch plasticizer production began in 1981 (PAP-00057933). PA, a core constituent of both ester production processes, required a continuous process as follows according to the *ECRA Site Evaluation Submission SES*, dated August 3, 1990 (PAP-00057899):

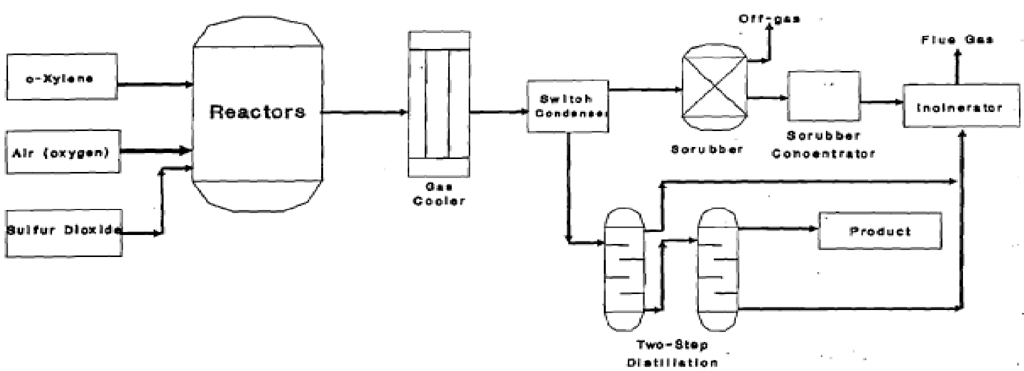
- Partial oxidation of orthoxylene took place over a fixed catalyst bed of vanadium pentoxide. The addition of sulfur dioxide produced an exotherm removed using a eutectic solution that was temperature controlled by high pressure steam.
- The PA reaction gas was further cooled, sublimed and then melted into crude PA. The crude PA was refined through a two-step distillation process, and byproducts were burnt in an on-site incinerator.
- Three blowdown streams generated during the process included the gas cooler, oil cooler, and cooling tower. The gas and oil cooler blowdown were directed to the Basacryl sump pit, and the cooling tower blowdown was released to the sump via the sewer system.
- All effluents were treated at the on-site WPT facility (PAP-00057899-903).

A flow diagram of the PA manufacturing process is presented below (PAP-00057904):

BASF CORPORATION
KEARNY, NEW JERSEY

Figure 6-1

PHTHALIC ANHYDRIDE
PROCESS FLOW DIAGRAM

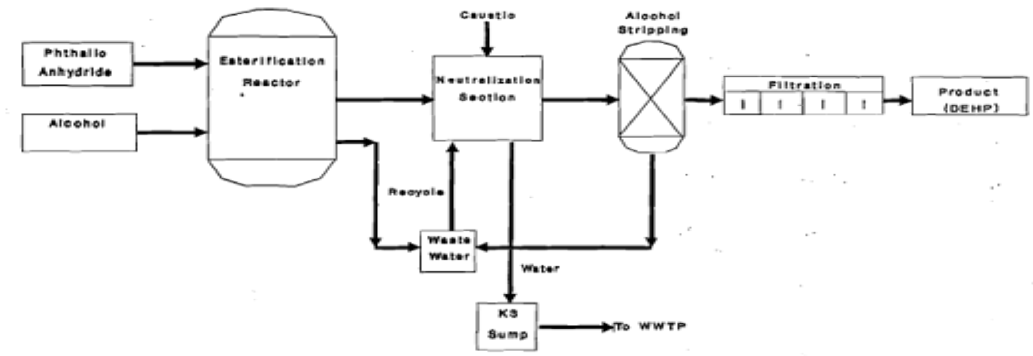


Continuous esters (i.e., di(2- ethylhexyl) phthalate [DEHP], diisononyl phthalate [DINP]) were produced as follows:

- At the Continuous Ester Plant, two phthalate esters were produced via esterification of PA with an alcohol. Bis(2-ethylhexyl) phthalate required 2-EHOL and Palatinol-N required n-nonanol. The process consisted of five steps: 1) esterification; 2) alcohol removal; 3) neutralization and washing; 4) steam stripping and drying; and, 5) filtration.
- Esterification took place in a four-reactor continuous cascade system.

- Byproducts were either removed and sold as co-products, or treated at the WPT facility.
- The process resulted in a washed diester that was stripped of any remaining alcohol. The dry diester, essentially free from alcohol, was filtered using high powered carbon and a filter aid (PAP-00057901-02).

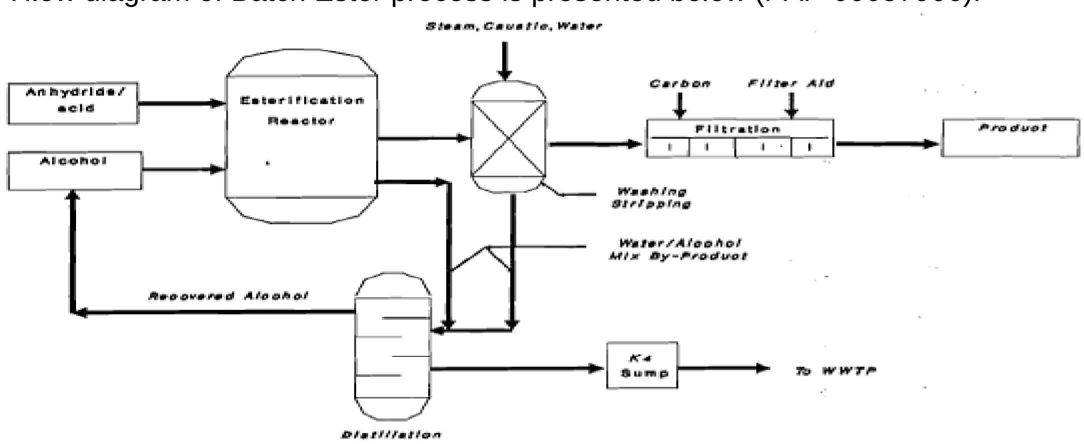
A flow diagram of Continuous Ester Plant process is presented below (PAP-00057905):



Batch Ester Processes took place in the Specialty Esters Plant. The discontinuous (batch) operation produced six esters as follows:

- Alcohols used varied from C_4 to $C_{9\text{-}11}$. The acid or anhydride used were PA, trimellitic anhydride or adipic acid.
- A typical reaction involved n-butanol esterification of PA to form di-(n-butyl) phthalate. The process involved: 1) esterification; 2) alcohol stripping; 3) neutralization and washing; 4) steam stripping and drying; and, 5) filtration (PAP-00057902).
- Light fractions of alcohol were sold as co-product EP275.
- Neutralization and washwater were treated in the on-site WPT facility. The washed diester was steam stripped of alcohol, dried, and filtered.
- Excess water was either recycled or used for neutralization (PAP-00057902-3).

A flow diagram of Batch Ester process is presented below (PAP-00057906):



BASF constructed the Kearny incinerator in 1971 to treat off-gas scrubber water during PA production. According to a BASF response to an EPA Request for Information, dated November 30, 1995, off-gas scrubber water sent to the Kearny incinerator can be characterized as an organic acid/water solution. Additional waste streams (K093 and K094) from PA distillates were also incinerated (PAS-00054146). The incinerator ceased operations upon plant closure in 1990 (PAS-00054286).

A table of the chemical makeup and properties of the incinerator feed-streams is presented below (PAS-00054154):

CHEMICAL MAKEUP AND PROPERTIES OF BASF INCINERATOR FEEDSTREAMS

Feedstream Name	Nominal Feed Rate	Chemical Composition	Other Physical Properties
Scrubber Water	4000 lbs/hr Continuous	Phthalic Acid 5-8% Misc. Organic acids 25-40%, principally maleic acid Chlorine <0.1% Sulfur <0.01% Ash 0.03% Water & NH_3 50-70%	Aqueous Stream (Non-Hazardous) Temp. 40-45°C (liq) Sp. Gr. 1.10-1.15 pH 3-5 Viscosity 1.0 cp @ 50°C
PAA Distillates	400 lbs/hr Intermittent	Phthalic Anhydride 60% Maleic Anhydride 5-10% Misc. Organic Acids and Anhydrides 16-26% Chlorine <0.1% Sulfur 0.1% Ash <0.35%	Organic Waste Stream Temp. 135°C (liq) Sp. Gr. 1.1-1.2 Flash Point -- 180°F Heating Value 9-10 KBTU/lb
DOP Lights	220 lbs/hr Intermittent	2-Ethyl Hexenes 75-80% 2-Ethyl Hexanol 5-15% 2-Ethyl Hexanal 1-2% n-Butanol 2% Chlorine <0.1% Sulfur <0.1% Ash <0.1%	Organic Waste Stream Temp. 20-40°C (liq) Sp. Gr. 0.73-0.76 Viscosity 32 SUS @ 100°F Flash Point 135°F Heating Value 11-18 KBTU/lb
MX Organics	220 lbs/hr Intermittent	2-Ethyl Hexanol 20-30% n-Butanol 0-10% Isodecanol 10-20% Bis (2-Ethylhexyl) Phthalate 3.0% Di-n-butyl Phthalate 1.2% Phthalic acid esters, n.o.s 35-45% Chlorine <0.1% Sulfur <0.1% Ash <0.1%	Organic Waste Stream Temp. 20-40°C (liq) Viscosity 43 SUS @ 100°F Flash Point 131°F Heating Value 14-17 KBTU/lb

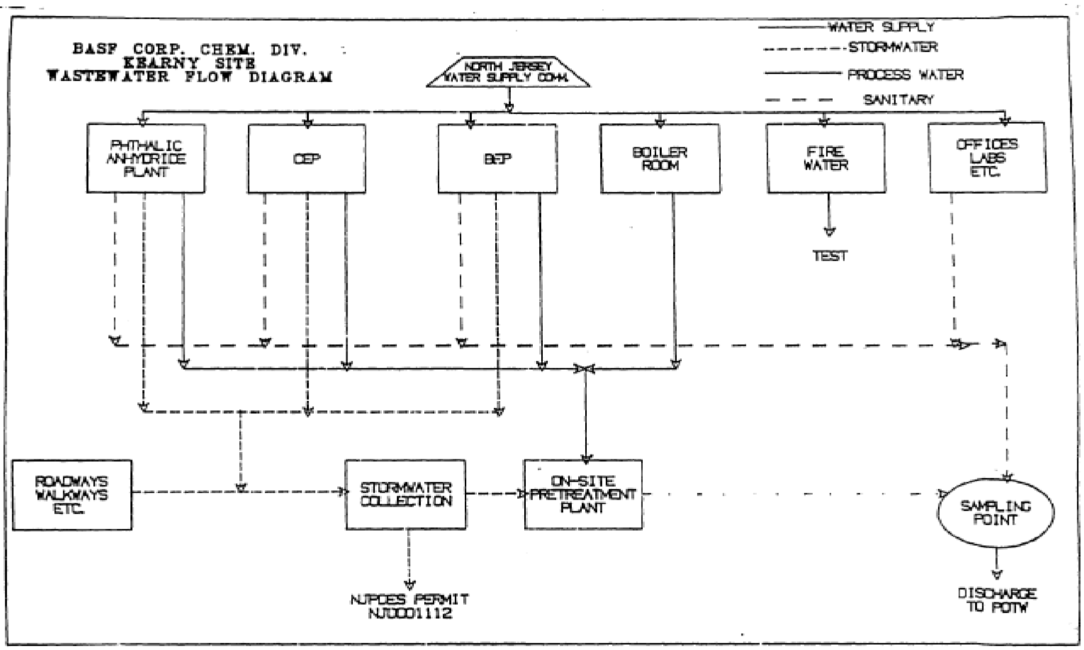
Between 1966 and 1973 process wastewater from the Basacryl Plant was first placed in a pit and air sparged and then neutralized before discharging to the Kearny Publicly Owned Treatment Works (POTW) (PAS-00054144). In 1973, BASF completed a WPT facility. Wastewater lagoons (lined earthen impoundments), located south of the wastewater treatment plant and boarding the Passaic River, were used to process wastewater prior to treatment (PAP-00058722). In addition, according to *Potential PCB Sources to PRSA (Volume 1 of 4)*, dated December 18, 2001, between 1971 and 1976, the facility used concrete-lined evaporation ponds located at the southern end of the facility to reduce the volume of incinerated materials (PAS-00124538). There are no citations or available underlying documents to support these statements.

According to the amended *Baseline Monitoring Report*, dated November 30, 1988, process wastewater and contaminated stormwater was routed through the WPT facility prior to being discharged to the Kearny POTW (PAP-00060950). Process wastewater from the production of plasticizers was sent to a skimmer pit in order to remove organics before discharge to the Kearny POTW. Prior to December 2, 1988, stormwater was first sent to an underflow/overflow outfall pit to remove organics before being discharged to Newark Bay (PAS-00054144).

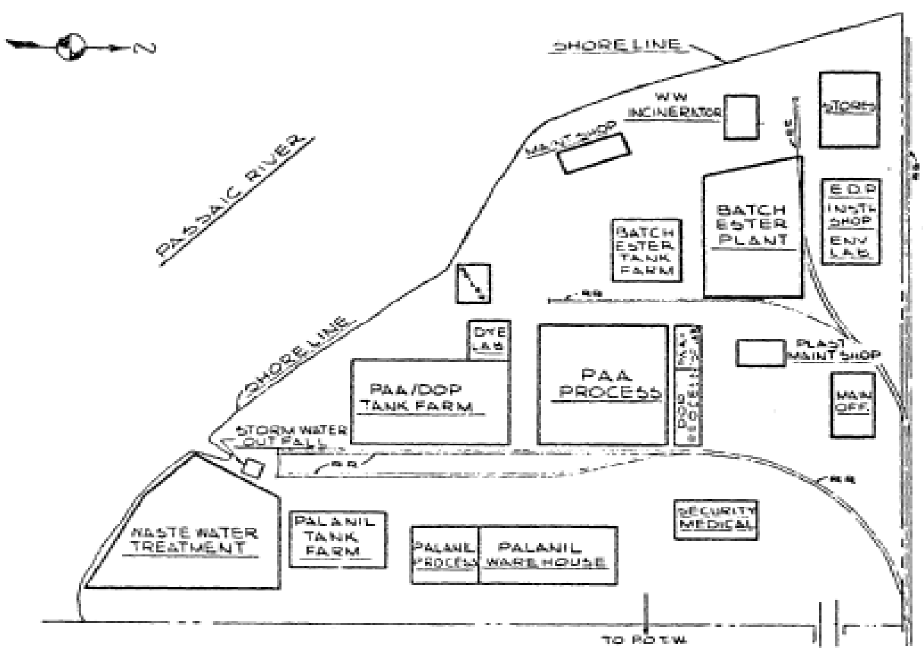
As reported by the September 4, 2002 *Sources of Dioxin in the PRRI Area*, by Tierra Solutions, non-contact water generated from the site's boiler room and PA Plant discharged directly to the Passaic River via a New Jersey Pollution Discharge Elimination System (NJPDES) permit to Discharge to Surface Water (PAP-00182860). However, this is not consistent with the Manufacturing Operation Description, which states that wastewater from the PA Plant was directed to the Basacryl sump pit and treated through the site waste treatment plant (PAP-00057900), or with the Description of Operations, which states that non-contact cooling water and boiler regeneration were combined with contaminated process and stormwater (PAP-00060950). Effluent from the treatment plant was combined with sanitary sewer effluent prior to discharge to the Kearny POTW (PAP-00060950).

According to a Resource Conservation and Recovery Act (RCRA) Part B Permit Application revised in October 1985 and completed by Badische Corporation in 1985, the facility generated the following amount of hazardous waste: 1.5 tons/year of phthalate ester spill residue; 180 tons/year of PA distillation residue; 180 tons/year of PA distillation lights; 100 tons/year PA spill residue; 800 tons/year of MX Organics; 40 tons/year of spent catalyst; and, 800 tons/year of DOP lights (PAP-00061959). Sampling results for DOP Lights were less than the detection limits (less than 4 parts per million [ppm] lead and less than 0.2 ppm mercury) (PAP-00061970). Sampling results for MX Organics were also less than the detection limits (less than 4 ppm lead and less than 0.2 ppm mercury) (PAP-00061972). According to a NJDEP *Hazardous Waste Generator Annual Report 1989 Waste Summary Form* completed by BASF in 1990, BASF stated they generated greater than 100 tons of hazardous waste during the 1989 calendar year, specifying 400 gallons of liquids and 2,804,112 pounds (PAS-00054062-63).

A diagram of the site wastewater flow is presented below (PAP-00060958):



A drawing of the BASF site layout is presented below (PAS-00054201):



OVER VIEW
KEARNY WORKS

4. Identified COCs

- PCBs (detected)
- Dioxins/Furans
- PAHs (detected)
- DDx (detected)
- Copper (detected)
- Mercury (detected)
- Lead (detected)

PCBs

A Hazardous Substances and Waste Inventory identified a use code of 11 for polychlorinated biphenyls (PCBs), which corresponds to a typical use range of 11 to 110 pounds. The PCBs were stored in drums at the PA/Continuous Ester Plant (CEP) (PAP-00057918, 20). The year of the inventory was not specified, but it was submitted as part of the *ECRA General Information Submission Form*, dated June 11, 1990 (PAP-00057882).

A 1987 NJDEP *Uniform Hazardous Waste Manifest* completed by BASF documents that PCBs were shipped offsite to a waste facility (PAP-00061051).

The BASF *PCB Pre-Inspection Report*, dated July 11, 1988 stated that there were 29 pieces of oil filled electrical equipment at the site, and 20 of these were tested for PCBs in February 1984. There were 17 oil containing transformers onsite:

- four were known to have contained less than 50 ppm PCBs (two were silicone fluid transformers);
- eight contained between 50-500 ppm PCBs;
- one transformer contained over 500 ppm PCBs;
- one transformer was out of service and awaiting removal; and,
- three were askarel transformers (PAP-00061060).

There were additionally three oil-containing heat transfer systems, one of which was tested for PCBs and contained less than 50 ppm PCBs. The other two were not tested because they were sealed type; information was requested from the manufacturer. There were also six oil-containing circuit breakers onsite. Two were tested for PCBs, one of which contained less than 50 ppm PCBs and the other contained greater than 50 ppm PCBs. The four other circuit breakers were not tested because they were in the old substation and were old equipment of the sealed type. One was noted as appearing to be oozing from the side, which the maintenance operator felt was from insulation (PAP-00061060). The *PCB Pre-Inspection Report*, dated July 11, 1988, also noted that the foundations on which four transformers sat in the old substation showed clear evidence of oil spillage, though none appeared to be leaking at the time of the inspection (PAP-00061060). PCB concentrations of the transformers in the substation ranged between 80 and 85 ppm. PCB concentrations of the three transformers in the boiler house ranged between 75 ppm and 3640 ppm (PAP-00061094-96). The *PCB Pre-Inspection Report*, dated July 11, 1988 does show that before November 1987, 1,825 gallons of new oil had been replaced in electrical equipment to reduce its PCB content (PAP-00061088). A BASF *PCB Audit Report*, dated February 27, 1989, noted that the oil

used in 261 pieces of equipment did not contain PCBs, according to the oil manufacturer (PAP-00061122).

Dioxins and Furans

According to a January 28, 1994 response to EPA Request for Information, BASF states it did not, to the best of its knowledge, receive, utilize, manufacture, discharge, release, or dispose of any pesticides, materials containing 2,3,7,8-tetrachlorodibenzo-p-dioxin, or any other dioxin compounds (PAS-00054400).

In a March 12, 1996 letter to EPA, BASF stated dioxin precursors used in facility operations included chloranil, PA, maleic acid, and 2,6-dibromo-p-nitroaniline (PAS-00053985). Benzaldehyde was also handled at the facility (PAS-00054152).
No information regarding the detection or remediation of chlorinated dioxins or furans was identified in the available site files.

PAHs

Polynuclear aromatic hydrocarbon (PAH) containing materials such as No. 2 fuel oil, No. 6 fuel oil, and gasoline were handled at the site as a part of plant operations (e.g., heating), but it is unclear whether other materials at the site described in general terms, such as waste oil, cold oil, or oil, refer to PAH-containing materials. A 34,000 gallon No. 6 fuel oil tank was installed in 1969 and was still present in 1990 (PAP-00057914).

Fuel oil was unloaded into an aboveground storage tank (AST) diked holding tank, located at the north end of the site. From the holding AST, fuel was dispersed to a boiler house. The boiler house was present in 1990 and had operated since 1971. Prior to 1971, a boiler house located at the north end of the site, adjacent to the holding AST, was used. This boiler house was demolished in February 1980 (PAP-00057907-08).

Other fuel and oil tanks and storage at the site include:

- Two No. 6 fuel oil ASTs, with capacities of 30,000 gallons and 60,000 gallons, respectively (both ASTs were diked);
- Two gasoline underground storage tanks (USTs), with capacities of 500 gallons and 1,000 gallons, respectively (the USTs were decommissioned in 1990);
- A No. 6 fuel oil PA/Maintenance tank;
- 1,900 gallons of oil stored in drums;
- An 8,000 gallon waste oil tank, installed in 1975;
- A 500 gallon waste oil tank, installed in 1975;
- An 8,000 gallon cold oil tank, installed in 1970;
- A 5,000 gallon hot oil tank, installed in 1970; and,
- Waste oil stored in drums at the truck shop (PAP-00057912-20).

Equipment that operated at the site and had potential to emit PAHs include:

- Dowtherm boiler – used to heat reactors in the BEP Plant, exact period of use unknown, but United Cork Companies manufactured cork products with heat between 1936 and 1966, potential for PAHs in air emissions and ash (PAP-00057996);

- Organic waste incinerator – operated at the site to incinerate organic wastes from the ester process, operated from 1971 to 1979, potential for PAHs in air emissions and ash (PAP-00057995); and,

- RCRA incinerator and scrubber – used to burn distillation residues from the PA process until the plant was decommissioned in 1990, potential for PAHs in air emissions and ash (PAP-00057982).

DDx

Sampling results contained within the *Remedial Investigation Work Plan, BASF Corporation*, dated January 1995 identified 50.8 micrograms per kilogram (µg/kg) 4,4'-DDT in sample #AEC17-ADD1 collected from between 0.5 and 1 feet below ground surface (bgs). The sample was collected on March 12, 1991 (PAP-00058888).

Mercury

An undated Hazardous Substances and Waste Inventory identified a use code of 10 for mercury, which corresponds to a typical use range of 1 to 10 pounds. The mercury was stored in bottles at the Electric Shop/Lab (PAP-00057917, 20; PAP-0061244). The year of the inventory was not specified, but it was submitted as part of the *ECRA General Information Submission Form*, dated June 11, 1990 (PAP-00057882).

An October 1985 RCRA Part B Permit Application completed by Badische Corporation contained analytical information about incinerator waste: mercury was less than the detection limit of 0.01 ppm from solid-phase PA distillation and less than the detection limit of 0.2 ppm from MX Organics (PAP-00061971-72). MX Organics was characterized as a hazardous waste due to ignitability (PAP-00061962).

Lead

An October 1985 RCRA Part B Permit Application completed by Badische Corporation contained analytical information about incinerator waste: lead was less than the detection limit of 0.2 ppm from solid-phase PA distillation and less than the detection limit of 4 ppm from MX Organics (PAP-00061971-72). MX Organics was characterized as a hazardous waste due to ignitability (PAP-00061962).

Historic Fill

The Allocation Team has determined that the property is located on regional Historic Fill as designated by the NJDEP.[1]

The NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 contaminants of concern (COCs): PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List (TAL) for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

According to the *Baseline Ecological Evaluation*, dated September 2008, the site was filled in the late 1880s/early 1900s, and soil characterization demonstrated the presence of PAHs and various metals in the historically placed fill. The *Baseline Ecological Evaluation*, dated September 2008, did not include PAHs and metals in its investigation, but did include PCBs (PAP-00062468).

The *Addendum A Remedial Action Work Plan for BASF Corporation's Kearny Facility*, dated November 15, 2000 noted that analytical results showed that PAHs and metals were "ubiquitous throughout the site" and were unrelated to former BASF operations. It was determined that PAHs and metals were likely components of Historic Fill, as opposed to PCBs that were attributed to facility operations (PAS-00107464).

The *Addendum A Remedial Action Work Plan for BASF Corporation's Kearny Facility*, dated November 15, 2000 claims BASF has adequately demonstrated Historic Fill conditions, consistent with New Jersey Administrative Code (NJAC) 7:26E-4.6(b) for the remedial investigation of landfills. The *Addendum A Remedial Action Work Plan for BASF Corporation's Kearny Facility*, dated November 15, 2000 also states that the investigations adequately located and characterized fill while segregating hot spot areas not related to the Historic Fill, and 192 test pits installed over the 27-acre site provided

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[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHS & lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill - PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

more than the required number of test pits. Moreover, the site demonstrated ubiquity and consistent correlation with acceptable Historic Fill concentrations. PAHs and metals were addressed with engineering and institutional controls (PAS-00107471-72).

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below.

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	6,100 mg/kg
Copper	37,000 mg/kg
Mercury	2.2 mg/kg
Benzo(a)anthracene	51 mg/kg
Benzo(a)pyrene	47 mg/kg
Benzo(b)fluoranthene	82 mg/kg
Benzo(k)fluoranthene	4.62 mg/kg
Dibenzo(a,h)anthracene	4.44 mg/kg
Indeno(1,2,3-cd)pyrene	2.96 mg/kg
Total PCBs	254 mg/kg

5. COC Pathways

The site is located at the southern end of Kearny Point and is boarded on the west and the south by the Passaic River (PAP-00061594).

Sanitary and Storm Sewer

Pre-treated effluent from the WPT facility was then directed to the Kearny POTW (PAP-00057909-10; PAP-00061593; PAS-00054144).

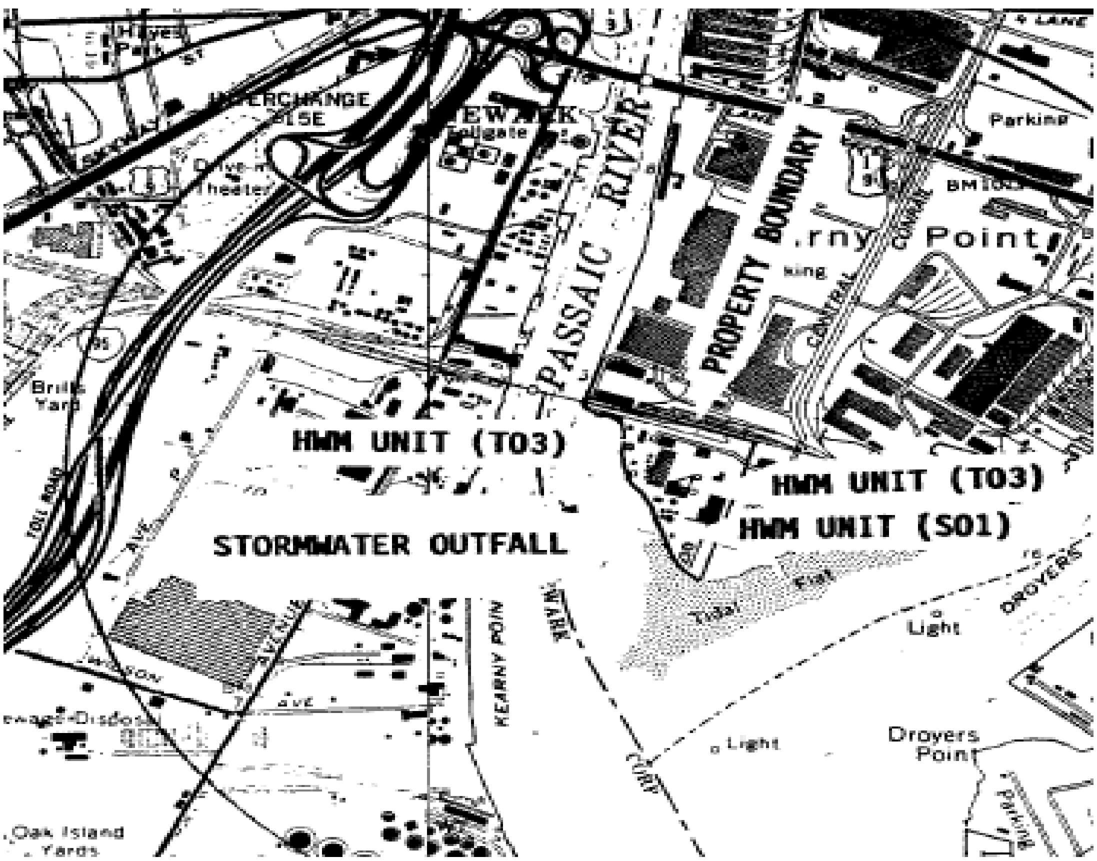
The sewer system at the facility was comprised of three components: 1) stormwater, 2) process flows, and 3) sanitary flows. The process and stormwater flows were combined as a single sewer system, while the sanitary sewer system was separated and discharged directly to the trunk sewer line to the Kearny POTW. Process and stormwater flows were directed to sewer and sump systems for pretreatment at the WPT facility at the far southern portion of the property (PAS-00054404-05).

The sanitary sewer system discharged to a K1-sump which ran into to the Kearny POTW. The sump was the sole location where all three sewer systems (sanitary, treated process, and treated storm) were mixed at the facility. Prior to this sump, the systems were separate and distinct (PAS-00054405; PAP-00057910). Process flows from the Continuous Ester Plant, the Batch Ester Plant, and all floor drains were directed to sumps. Process wastewater then flowed to two treatment tanks, the clarifier and post-neutralizer, and two sumps before discharging to the Kearny POTW. Non-contact cooling water blowdown was directed to the Basacryl pit. Water from the oil and gas coolers and non-contact boiler house water were also directed to the Basacryl pit sump (PAS-00054404).

Based on a November 30, 1995 response to an EPA Request for Information, prior to December 2, 1988, BASF sent stormwater runoff to an underflow/overflow outfall pit (sump) to remove organics before discharging to Newark Bay (PAS-00054144). The sump contained two baffles; an underflow baffle retained any floating oils; and, an overflow baffle retained heavier suspended solids. A floating rope skimmer removed residual oils and conveyed them to a bulk storage tank. Debris and sediment in the storm sewers were retained in the second baffle and removed manually. Under normal conditions, surface water was discharged to the site WPT facility prior to discharge to the Kearney POTW. Only during intensely heavy rainfall did surface water overflow the diversion capacity and discharge into receiving waters (PAP-00058223).

According to the January 28, 1994 response to EPA Request for Information, storm flows originally discharged to the Passaic River through two concrete pipes located near the fire water tank on the southern tip of the property (PAS-00054405). According to a *Stormwater Pollution Prevention Plan*, dated July 1995, BASF's NJPDES Permit expired on July 17, 1989. Concurrently on that date, BASF began discharge of facility stormwater to the PVSC system (PAP-00061482). BASF ceased operations in 1990, and facility decommissioning took place between 1991 and 1992 (PAP-00061482).

A figure depicting the location of the stormwater outfall and the hazardous waste management units is presented on the below (PAP-00062194):



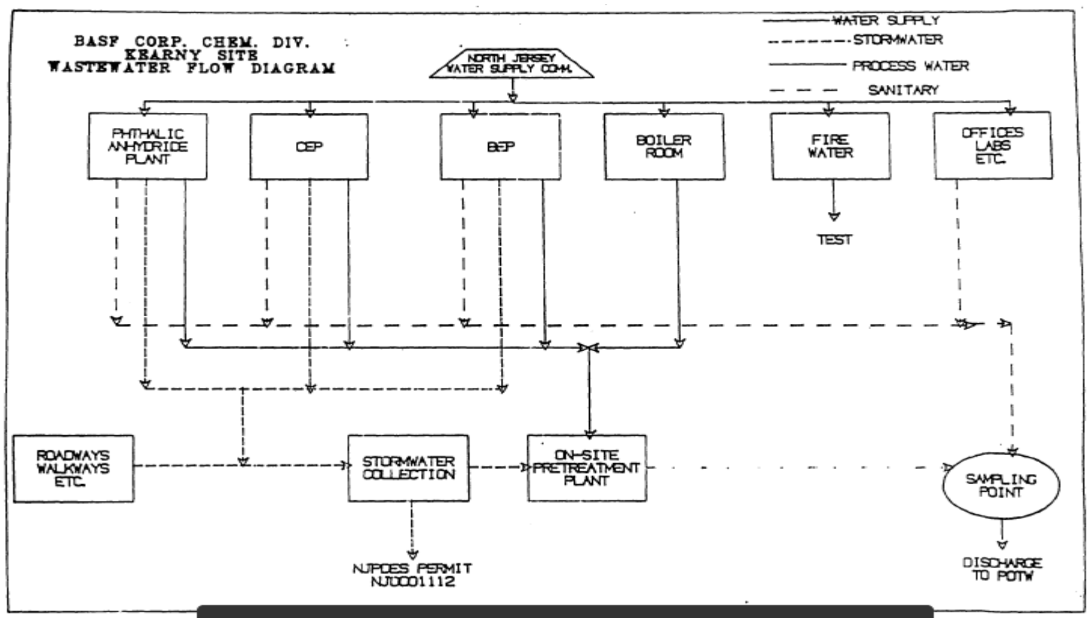
Documented wastewater discharge volumes are as follows:

- According to a *PVSC Waste Effluent Survey*, dated August 3, 1972, BASF Wyandotte Corporation used 30.9 million gallons for water for product and discharged 111.8 million gallons to the sanitary sewer in 1971. Rainfall of approximately 45 inches per year was noted to discharge to the storm sewer (PAP-00058130). The discharge to the sanitary sewer was continuous and constant over a 24 hour period with an approximate 5 percent reduction in volume on the weekends (PAP-00058131). Water quality results were not specified for OU2 COCs, so it is unclear whether testing of copper, lead, or mercury occurred.

- According to an undated EPA Standard Form A-Municipal, Section IV, Industrial Waste Contribution to Municipal System, the volume of water discharged to the Kearny POTW during 1973 was 823,000 gallons per day (PAP-00060973). On November 26, 1973, wastewater concentrations of lead were 0.0 and wastewater concentrations of mercury were 0.0003, however units were not specified (PAP-00060974).

- The effluent from the WPT facility and an existing dye plant resulted in 350,000 gallons per day, which was treated prior to discharge to the Kearny POTW (PAS-00054118). The time period for this information was not specified, but the WPT facility was constructed in 1973, so it must be post-1973.

- According to the amended *Baseline Monitoring Report*, dated November 30, 1988, the site average and maximum daily flows to the Kearny POTW were 248,000 gallons per day and 530,000 gallons per day, respectively, based on measured flows from October 1987 to November 1988. Non-contaminated wastewater (cooling tower blowdown - 7 percent, wet surface cooler - 8.5 percent, boiler regeneration - 7.7 percent, and demineralizer – 6.6 percent) constituted approximately 29.8% of the total flow (PAP-00060951). Six 24-hour composite samples of the site effluent were collected over a two-week period during February 1988; lead was detected at a maximum concentration of 0.100 ppm and an average concentration of 0.100 ppm (PAP-00060951, 57). The diagram below depicts the sampling location and the various water sources (PAP-00060958).



- According to a letter from BASF to NJDEP, dated June 17, 1994, since July 17, 1989, BASF discharged approximately 20,000 gallons per day of stormwater and sanitary waste to PVSC. BASF was instructed by PVSC to obtain a discharge permit for site stormwater (PAP-00061506).

Direct Release

According to the *PVSC Annual Report for 1971*, dated January 18, 1972, on July 13, 1971 PVSC received a call from Mr. T. Harding of the State Department of Environmental Protection about BASF discharging into the Passaic River. Upon inspection by PVSC, industrial waste was seen coming out of the ground and flowing into the Passaic River. BASF immediately ordered excavation of the area and found a break in a 3-inch pipe which was a temporary sanitary line for a construction trailer. The sewage from the main line was backing up and flowing out through the break. The break was repaired the same day and the line was later removed (PAS-00034592).

The PVSC *Annual Report for 1973*, dated February 28, 1974, stated BASF ordered five truckloads of 2-ethyl-hexanol from Eldorado Terminal Corp. for delivery on Saturday, February 10, 1973. During delivery, a welded seam ruptured on the storage tank and 2,500 barrels of alcohol drained into the Passaic River. The loss was not detected by BASF until Sunday, February 11, 1973. No detrimental effects were discovered upon inspection by BASF personnel (PAS-00034721).

Spills

According to a RCRA Part B Permit application revised in October 1985 and completed by Badische Corporation, barriers for drainage or flood control, and runoff control systems did not exist at the site (PAP-00062140).

According to information contained in BASF's January 28, 1994 response to an EPA Request for Information, in 1985 the sump drain overflowed twice due to rain. The first time was on August 30, 1985 when 34,000 gallons of wastewater spilled, and the second time was on October 23, 1985 when 20-25 gallons of "91P" spilled (PAS-00054427).

Spill reports state that two releases of No. 6 fuel oil occurred at the site: a spill of an unknown quantity of fuel oil occurred in 1965 (PAP-00057923), and a second spill of 10-15 gallons of No. 6 fuel oil occurred in 1984 (PAP-00057924).

Evidence of oil spillage near transformers located in the old substation (transformers with serial Nos. 68946, 528028, 528029, and 1316793) occurred near the northern property boundary (PAP-00061060). One transformer (serial No. 19415), which was located in the main substation near the maintenance building, had a possible weld leak that existed since February 1987 (PAP-00061135). An audit conducted in 1988 identified cracks in the concrete under certain transformers (PAP-00061133).

A table of spills and discharges that occurred at the site is presented below (PAP-00057923-25):

BASF CORPORATION
Kearny, New Jersey

ECRA PROGRAM

Former Spills or Discharges

Reference Number	Date	Chemical Released	Amount	Reported To	Action Taken
S-1	1973	2-ethylhexanol	150,000 gal	BASF	unknown
S-2	1965	#6 Fuel oil	unknown	unreported	none; oil from boiler was permitted to leak into soil by previous owner
S-3	1976	Molten Phthalic anhydride (old dye lab)	unknown	BASF	permitted to harden, chipped away
S-4	1/2/90	EP275 (mixed pthalate esters)	unknown	BASF	excavation of contaminated soil and debris
S-5	4/11/90	bis(2-ethylhexyl)phthalate(DEHP)	35 gal	BASF	outside contractor cleanup (Cambridge)
S-6	1977	indigo spill Palanil Plant	1,500	BASF	to sewer to WWTP
S-7	5/19/90	Phthalic Anhydride (PA)	50-70 gal	BASF	cleaned up
S-8	4/11/90	DEHP	35 gal	BASF	outside contractor cleanup (Cambridge)
S-9	2/22/90	Water/alcohol mix	10 gal	BASF	none seepage occurred
S-10	2/13/90	DEHP	20 gal	BASF	directed to sewer to WWTP
S-11	12/19/89	TOTN-E	25-35 gal	BASF	cleanup effected by BASF
S-12	1/6/90	Palanil N	10-20 gal	BASF	contained in dike
S-13	12/19/89	PA	15-20 gal	BASF	unknown
S-14	11/28/89	DEHP	4,000 gal	BASF	contained in dike/DEHP reworked
S-15	11/21/89	DEHP	15 gal	BASF	contained in drain
S-16	11/8/89	PA	85-90 gal	BASF	outside contractor cleanup (Cambridge)
S-17	9/5/89	DEHP	100 gal	BASF	outside contractor cleanup (Cambridge)
S-18	8/10/89	DEHP	200 gal	BASF	outside contractor cleanup (Cambridge)
S-19	5/3/89	PA	30-35 gal	BASF	spill dispersed with water
S-20	1/15/88	PA	45-50 gal	BASF	unknown

S-21	8/31/87	DEHP	30-40 gal	BASF	BASF cleaned up spill
S-22	9/8/87	PA	10 gal	BASF	contained in dike
S-23	4/30/87	2-ethylhexanol (EH)	100 gal	BASF	contained in dike
S-24	4/26/87	2EH	500 gal	BASF	contained in dike
S-25	4/15/87	DEHP	100 gal	BASF	BASF cleaned up spill
S-26	4/22/86	TOTM-E	20 gal	BASF	pads applied to spill
S-27	4/3/86	mixed organics	5-30 gal	BASF	unknown
S-28	4/2/86	DEHP	20 gal	BASF	contained in dike
S-29	3/10/86	DEHP	30-40 gal	BASF	unknown
S-30	3/3/86	PAL-N	5-10 gal	BASF	soda ash applied; spill cleaned up
S-31	2/6/86	PA	200 gal	BASF	unknown
S-32	12/19/85	Waste organics	unknown	BASF	unknown
S-33	12/2/85	Wastewater	unknown	BASF	unknown
S-34	10/23/85	91P	20-25 gal	BASF	overflow of sump due to rain
S-35	8/30/85	Wastewater	34,000 gal	BASF	overflow of sump due to rain
S-36	6/24/85	Wastewater	unknown	BASF	unknown
S-37	6/13/85	DEHP	400-500 gal	BASF	spill on concrete
S-38	1/3/85	PA	20 gal	BASF	unknown
S-39	1/26/85	Wastewater	7,000 gal unknown	BASF	soda ash and water applied to spill directed to sewer
S-40	11/4/84	DIDP-E	50 gal	BASF	directed to sewer
S-41	9/11/84	Isopropyl alcohol	100 gal	BASF	contained in diked area
S-42	8/2/84	PA	500 gal	BASF	unknown
S-43	7/18/84	DEHP	20 gal	BASF	unknown
S-44	7/9/84	91P	30 gal	BASF	unknown
S-45	6/19/84	DEHP	5-10 gal	BASF	absorbent applied and cleaned up
S-46	1/4/84	#6 fuel oil	10-15 gal	BASF	unknown
S-47	12/30/83	2EH	25 gal	BASF	cleaned up
S-48	12/19/83	Heat transfer salt	50 gal	BASF	unknown
S-49	12/13/83	Wastewater	unknown	BASF	directed to sewer
S-50	11/4/83	TOTM	15 gal	BASF	unknown
S-51	8/11/83	2EH	100 gal	BASF	unknown
S-52	5/13/83	2EH	30-35 gal	BASF	unknown
S-53	5/9/83	PA	30 gal	BASF	unknown
S-54	12/7/82	2EH	60 gal	BASF	unknown
S-55	6/15/82	2EH	60-70 gal	BASF	unknown
S-56	6/2/82	PA	70 gal	BASF	unknown
S-57	4/12/82	PA	15-20 gal	BASF	unknown
S-20A	6/8/88	DEHP	32,000 lbs.	NJDEP/BASF	All free liquid collected approximately 20 cy of soil and debris removed and shipped to Alabama.

6. Regulatory History/Enforcement Actions

Inspections

On March 7, 1990, BASF responded to a Compliance Evaluation Inspection/Corrective Action Report pertaining to exceedances of a permitted lead threshold of 0.05 ppm in upgradient Well 2 which in the second quarter of 1989 had 0.64 ppm lead, and three downgradient wells (4, 7, and 11) exceeded discharge limits at 0.076, 0.099, and 0.056 ppm, respectively. Base neutral extractables also exceeded discharge limits (PAP-00061049).

On October 4, 1994, BASF received a letter from NJDEP indicating that a September 13, 1994 inspection found a soil pile next to the Passaic River that was on a plastic liner. The booms were deteriorating and the pile was uncovered. The NJDEP Bureau of Environmental Evaluation and Cleanup Responsibility Assessment Supervisor required more information about the source of the pile that needed to be covered and properly boomed. BASF was to contact them with a proposed timeframe for submitting remedial investigation and remedial action work plans (PAP-00058586).

Violations

On January 20, 1981, BASF Wyandotte Corporation was found by NJDEP to have exceeded total organic carbon (TOCs) conditions of National Pollutant Discharge Elimination System (NPDES) Permit No. NJ0001112. The finding was based on an inspection sample taken on October 28, 1980 by NJDEP (PAP-00057808; PAP-00057822).

According to documents submitted with the *ECRA Site Evaluation Submission SES*, dated August 3, 1990, on April 14, 1988, BASF received a notice from NJDEP regarding significant violations of the NJPDES Permit No. NJ0001112. BASF had received an "unacceptable" rating from NJDEP following a Compliance Evaluation Inspection conducted on February 9, 1988. The Discharge Monitoring Reports (DMRs) for the period June 1, 1987 and August 31, 1987 revealed that all the permitted parameters (total organic carbon, petroleum hydrocarbons, temperature, and pH) exceeded established limitations. The DMRs for September 1, 1987 and November 30, 1987 revealed all parameters (with the exception of petroleum hydrocarbons) exceeded permit limitations (PAP-00057827-28).

On July 19, 1988 BASF received a Notification of Noncompliance with Sludge Quality Assurance Regulations from NJDEP which stated that they had no records of the facilities reporting, and was required to report in compliance within 60 days (PAP-00057832).

In August 1988, BASF was given a Notification of Reportable Events #22-27 for violating PCB regulations. The July 1987 Annual Report noted PCB contaminated transformer YAR 49871 had been stored for disposal on site for more than one year and the area the unit was stored in did not comply with regulations (PAP-00061053-58).

The site also had several violations related to the air permits, incinerator air emissions, and waste handling and/or documentation:

- The NJDEP issued a draft Notice of Final Denial of a Hazardous Waste Incinerator Permit Application for the PA incinerator (PAS-00054128). It is unknown when this notice was issued to BASF.
- On July 18 1988, BASF received an Administrative Order of Revocation and Notice of Civil Administrative Penalty Assessment for exceeding permit conditions for the incinerator (PAP-00057875).
- On October 11, 1988, BASF received an Administrative Order and Notice of Civil Administrative Penalty Assessment from NJDEP for operating an air pollution control apparatus with expired certificates (PAP-00057854).
- On November 1, 1988, NJDEP issued an Administrative Consent Order to BASF, and following a trial burn of the incinerator, a review of emission rates resulted in denial of the PA incinerator permit (PAS-00054133-35).
- On September 22, 1989, NJDEP issued an Administrative Order of Revocation and Notice of Civil Administrative Penalty Assessment to BASF for exceeding stack emissions from the incinerator (PAP-00057846).
- On November 19, 1989, NJDEP filed an Administrative Order and Notice of Civil administrative Penalty Assessment against BASF for failure to submit ten quarterly reports for the calendar periods April 1, 1987 to July 1, 1989 (PAP-00057843).
- In February 1990, BASF received a Notice of Civil Administrative Penalty Assessment from NJDEP for failure to submit a Risk Management Program Statement by June 30, 1989 (PAP-00057865).
- On June 21, 1990, Badische Corporation received a Notice of Civil Administrative Penalty Assessment from NJDEP for failure to submit a 1988 Generator Annual Report (PAP-00057857).
- On June 21, 1990, Badische Corporation received a Notice of Civil Administrative Penalty Assessment from NJDEP for failure to submit a hazardous waste generator annual report for 1989 (PAP-00057861).

On August 2, 1995, PVSC responded to a Request for Information and marked “yes” for BASF Wyandotte, indicating that they had information pertaining to the direct or indirect release, disposal, or discharges of hazardous substances into the Passaic River (PAP-00185357).

Permits

According to the September 4, 2002 *Sources of Dioxin in the PRRI Area*, by Tierra Solutions, non-contact water generated from the site's boiler room and PA Plant discharged directly to the Passaic River via a NJPDES permit to Discharge to Surface Water (PAP-00182860). However, no supporting documentation was provided with this document and this information was not corroborated with any other documentation. In a November 30, 1995 response to an EPA Request for Information, BASF states NJDEP issued a NJPDES stormwater discharge permit on November 30, 1979, Permit No. NJ0001112 (PAS-00054145). The NJPDES stormwater Permit No. NJ0001112 authorized BASF Wyandotte Corporation to discharge stormwater to Newark Bay/Passaic River beginning November 30, 1979 until December 2, 1988 (PAS-00054145).

According to a *Stormwater Pollution Prevention Plan*, dated July 1995, BASF's NJPDES Permit expired on July 17, 1989 (PAP-00061482); however, according to the *ECRA Site Evaluation Submission SES*, dated August 3, 1990, the permit expired on March 14, 1989 (PAP-00057792).

In 1995, BASF applied for and was issued another NJPDES stormwater discharge permit to Newark Bay (PAS-00054145).

On May 11, 1984, BASF was issued NJPDES Permit No. NJ0001112 that expired on March 14, 1989. The permit was effective on June 15, 1984. The permit covered discharges to groundwater from eight containment areas which functioned as surface impoundments and for the control of spills from storage tanks (PAP-00058643-45).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- *Phase I Sampling Plan Report/Phase II Sampling Plan, (*November 1991) (PAP-00059313)
- *ECRA Decommissioning Report,* August 1993 (PAP-00060085)
- *Remedial Investigation Work Plan,* January 1995 (PAP-00058675)
- *Stormwater Pollution Prevention Plan (SPPP),* July 1995 (PAP-00061474)
- *Remedial Action Work Plan,* October 1998 (PAS-00107417)
- *Addendum A Remedial Action Work, Plan* November 15, 2000 (PAP-00107459)
- *Remedial Investigation Report/Remedial Investigation Workplan,* October 2007 (PAP-00062216)
- *Remedial Action Report/Remedial Action Workplan*, November 2008 (PAP-00061578)
- *Baseline Ecological Evaluation (BEE)*, September 2008 (PAP-00062459)
- *Addendum 2 to the BEE,* May 2010 (PAP-00061437)
- *Soil Remediation Action Report*, 2011 (PAP-00062530)

Characterization Activities

Sewer

According to the updated *Baseline Monitoring Report*, dated November 30, 1988, six twenty-four hour composite samples of the site effluent were taken over a two week period during February 1988, and are stated to be representative of the expected pollutant discharge to Kearny POTW (PAP-00060951). Fluoranthene was detected at a maximum of 75 µg/L and an average of 24.3 µg/L; anthracene was detected at a maximum of 600 µg/L and an average of 213.3 µg/L; pyrene was detected at a maximum of 100 µg/L and an average of 27.5 µg/L; lead was detected at a maximum of 0.100 ppm and an average of 0.100 ppm (PAP-00060955-57).

Soil

Soil sampling results obtained from a *Remedial Investigation Work Plan, BASF Corporation*, dated January 1995 identified the following constituent concentrations:

Test Pit #19 – 26,000 µg/kg lead, 7,200 µg/kg copper, and 87 µg/kg mercury in test pit sample #S TP#19 (PAP-00058873).

AEC #1, Buildings 19, 28, and 28A – Soil sample #S SB1AEC1 collected between 0 and 0.5 feet bgs contained a laboratory estimated concentration of 7,200 µg/kg benzo(a)anthracene and was sampled on January 14, 1991 (PAP-00058783).

AEC #2, Tank Farm Area – Soil sample #S SB1AEC2 collected between 0 and 0.5 feet bgs contained 1,680 µg/kg benzo(b)fluoranthene. Sample was collected January 14, 1991 (PAP-00058799). Soil sample #AEC2-2B collected between 3.5 and 4 feet bgs contained 1,030 µg/kg benzo(a)anthracene. The sample was collected June 29, 1993 (PAP-00058803). Soil sample #AEC2-8A collected between 0 and 0.5 feet contained a laboratory estimated value of 4,400 µg/kg benzo(a)anthracene and 3,650 µg/kg benzo(b)fluoranthene. Sample was collected on June 29, 1993 (PAP-00058811). Soil sample #AEC2-9A collected between 0 and 0.5 feet bgs contained laboratory estimated concentration of 2,100 µg/kg benzo(a)anthracene. The sample was collected on June 30, 1993 (PAP-00058815).

AEC #3, Former Organic Waste Incinerator and Dowtherm Boiler Area – Soil sample #S AEC3-ADD2 collected between 0 and 0.5 feet bgs contained 3,280 µg/kg benzo(a)anthracene; 3,330 µg/kg benzo(a)pyrene and 5,040 µg/kg benzo(b)fluoranthene. The sample was collected on March 12, 1991 (PAP-00058819).

AEC #5, Compactor Area 40 Yard Compactor Roll-Off Box – Sample #S AEC5-ADD1 collected between 0 and 0.5 feet bgs contained 1,380 µg/kg benzo(b)fluoranthene. The sample was collected March 12, 1991 (PAP-00058827). Sample #AEC5-3 collected between 0 and 0.5 feet bgs contained 1,390 µg/kg benzo(b)fluoranthene. The sample was collected June 30, 1993 (PAP-00058831).

AEC #6, Buildings 23 and 23A, Boiler House Area and Basacryl Sump Pit – Sample #AEC6-1 collected between 3.5 and 4 feet bgs contained a laboratory estimated concentration of 1,500 µg/kg benzo(b)fluoranthene. The sample was collected June 28, 1993 (PAP-00058835).

AEC #7, Electrical Substation Area – Sample #S AEC7-ADD1 collected from the top six inches of soil contained 37,700 µg/kg Aroclor-1254 and 254,000 µg/kg Aroclor-1248. Sample was collected on March 11, 1991 (PAP-00058841). Sample #AEC7-1 collected from the top six inches of soil contained 23,200 µg/kg Aroclor-1232 and 2,220 µg/kg Aroclor-1260. The sample was collected on June 28, 1993 (PAP-00058845).

AEC #10, Electrical Substation Area – 758 µg/kg Aroclor-1260 was found in chip sample #X AEC10CH3 collected on January 22, 1991 (PAP-00058857). According to information contained in response to an EPA Request for Information, dated March 2, 1995, it states that PCBs in chip samples from the concrete pad ranged between 0.12 and 0.76 ppm in Area of Concern (AOC) 10 – Electrical Substation Area (Transformers 1, 2, 3, and 4) (PAS-00054098).

AEC #12, Continuous Ester Plant Area – Laboratory estimated value of 1,200 µg/kg benzo(b)fluoranthene in soil sample #AEC12-ADD1 collected from the top six inches of soil. The sample was collected on March 13, 1991 (PAP-00058863).

AEC #15, PA/CEP Tank Farm Area – 2,960 µg/kg indeno(1,2,3-c,d)pyrene and 2,810 µg/kg fluoranthene in soil sample #S AEC15-1 collected from the top six inches of soil. Sample was collected on January 18, 1991 (PAP-00058868).

AEC #16, Former Wastewater Lagoon Area – Soil sample #S B4AAEC16 collected from the top 6 inches of soil contained 1,940 µg/kg Aroclor 1254 collected on January 15, 1991 (PAP-00058881). Soil sample #S B1BAEC16 collected from the top six inches of soil contained 4,810 µg/kg benzo(a)anthracene, 5,560 µg/kg benzo(a)pyrene, 5,350 µg/kg benzo(b)fluoranthene, and 2,850 µg/kg benzo(k)fluoranthene. Sample was collected on January 15, 1991 (PAP-00058875). Soil sample #S B3BAEC16 collected from the top six inches of soil contained 5,060 µg/kg benzo(a)anthracene, 5,200 µg/kg benzo(a)pyrene, 5,380 µg/kg benzo(b)fluoranthene, and 4,620µ/kg benzo(k)fluoranthene. The sample was collected on January 15, 1991 (PAP-0058875). Soil sample #S SB5BAEC16 collected from the top six inches of soil contained 3,990 µg/kg benzo(a)anthracene, 5,970 µg/kg benzo(a)pyrene, 4,230 µg/kg benzo(b)fluoranthene, and 4,440 µg/kg dibenzo(k)fluoranthene. The sample was collected January 16, 1991 (PAP-00058879).

AEC #17, Wastewater Treatment Area [WPT Facility] – Soil sample #AEC17-ADD1 collected between 0.5 and 1 foot bgs contained 87,000 µg/kg copper, 64,000 µg/kg lead, and 280 µg/kg mercury. The sample was collected March 12, 1991 (PAP-00058889). Soil sample #AEC17-ADD1 collected within the top foot of soil contained 137 µg/kg Aroclor-1260 collected on March 12, 1991 (PAP-00058889). Soil sample #AEC17-ADD2 collected from between 0.5 and 1 feet bgs contained 1,280 µg/kg benzo(b)fluoranthene. The sample was collected on March 12, 1991 (PAP-00058887).

Soil sample #AEC17-ADD2 collected between 0.5 and 1 foot bgs contained 1,030 µg/kg indeno(1,2,3-c,d)pyrene (PAP-00058888).

AEC #18, Former Pilot Plant and Old Tank Farm – Soil sample #AEC18-ADD1 collected between 0 and 0.5 foot bgs contained 16,000 µg/kg copper, 34,000 µg/kg lead, and a laboratory estimated concentration of 42 µg/kg mercury. The sample was collected March 11, 1991 (PAP-00058897).

AEC #19, Former Dyestuff Plant and PA Flaker – Chip sample #X AEC19CH1 contained 425 µg/kg Aroclor 1260 and was collected on January 22, 1991 (PAP-00058901).

AEC #21, Railroad Spurs – Soil sample #AEC21-1A collected from 0 and 0.5 foot bgs contained 6,100,000 µg/kg copper, 37,000,000 µg/kg lead, and 2,200 µg/kg mercury. Sample was collected June 30, 1993 (PAP-00058917). Soil sample #S AEC21RR2B collected in the first six inches of soil contained 3,170 µg/kg benzo(a)anthracene, 714 µg/kg benzo(a)pyrene, and 2,040 µg/kg benzo(b)fluoranthene. The sample was collected March 11, 1991 (PAP-00058907). Soil sample #S AEC21RR4C collected from within the top 6 inches of soil contained 2,520 µg/kg benzo(a)anthracene, 2,990 µg/kg benzo(a)pyrene, and 3,490 µg/kg benzo(b)fluoranthene. The sample was collected March 12, 1991 (PAP-00058911). Soil sample #AEC21-1A collected from the top 6 inches of soil contained 3,560 µg/kg benzo(a)anthracene, 3,480 µg/kg benzo(a)pyrene, and 5,660 µg/kg benzo(b)fluoranthene. The sample was collected June 30, 1993 (PAP-00058915).

AEC #23, Former Stormwater Outfall – Soil sample #AEC23-ADD1 collected from 0 and 0.5 foot bgs contained 39,000 µg/kg copper, 27,000 µg/kg lead and 220 µg/kg mercury. The sample was collected March 12, 1991 (PAP-00058925).

According to the *Remedial Action Work Plan for BASF Corporation's Kearny Facility*, dated October 1998, Aroclor 1248 was detected at concentrations ranging between 0.640 and 254.0 milligrams per kilogram (mg/kg) at the site (PAS-00107438).

Remedial Activities

According to the *ECRA Decommissioning Report, BASF Corporation,* dated August 1993, activities included in decommissioning were asbestos removal, building and equipment decontamination, and sewer cleaning (PAP-00060089). BASF conducted a controlled plant closure by emptying tanks and piping, flushing them with detergents and/or caustics. Washwaters from the Palanil Area entered building drains that discharged to the sewer system to the on-site WPT facility. Decommissioning of the WPT facility involved passing washwater through a carbon and sand filtration system before entering the WPT facility. Sludge from the equalization tank, clarifier, and lime tank product was removed for off-site disposal (PAP-00060100-01). In the Batch Ester Area, where plant sewer systems were not available, wash water was collected or allowed to drain when available. Fuel tanks were emptied of content that was solidified and loaded for off-site disposal; staining and residual material was removed for off-site disposal (PAP-00060102). Hardened product in condensers were removed and drummed for off-site disposal. Sewers were cleaned with a high pressure jet hose

inserted into an upstream manhole or catch basin, and liquids and solids were removed via vacuum (PAP-00060104-05). Aboveground pipes were cleaned in a similar fashion. Solids were transported to an on-site pool, and liquids were decanted back into the sewer (PAP-00060105).

The *Remedial Action Work Plan for BASF Corporation's Kearny Facility*, dated October 1998, called for in situ remediation and a sediment washing pilot test for treatment of dredged sediments from the New York/New Jersey Harbor. The sediment washing project was conducted in conjunction with EPA, NJDEP and the Army Corps of Engineers. BASF ultimately planned to address the entire site with a full scale sediment treatment operation (PAS-00107420).

According to *Addendum A Remedial Action Work Plan for BASF Corporation's Kearny Facility*, dated November 15, 2000, due to the ubiquitous nature of metals and PAHs, the work plan singled out PCB remediation with soil/sediment washing. Metals and PAH concentrations and locations were believed to be the result of Historic Fill (PAS-00107471, 74). Soil washing extended to the water table with related soil suitable for non-residential usage relative to PCBs. Treated soil was to be deposited in a one foot layer over 12 acres of the untreated site (PAS-00107481). The *Remedial Action Report/Remedial Action Workplan*, dated November 14, 2008, states that between 2001 and 2005, BASF treated approximately 44,476 cubic yards by soil washing that included soil containing less than 50 mg/kg PCBs between August 2001 and June 2005. Treatment reduced PCB concentrations to within acceptable NRDCSCC. Soil exceeding that threshold was shipped offsite (PAP-00061602).

In a letter dated October 4, 2005, ELM, on behalf of BASF notified EPA that they were going to undertake a Self-Implementing PCB Cleanup (PAP-00061286). The *Remedial Action Report/Remedial Action Workplan*, dated November 14, 2008, states that BASF excavated 300 cubic yards of PCB contaminated soil with concentrations that exceeded Toxic Substances Control Act regulatory levels in 2005 (PAP-00061603). The *Remedial Action Report/Remedial Action Workplan*, dated November 14, 2008 also states that in response to the Notice of Self-Implementing PCB Remediation Notice, 438 tons of soil containing PCBs greater than 50 mg/kg above the water table were excavated and disposed of offsite. Any PCB concentrations remaining in the soil less than 100 mg/kg would be capped and incorporated into the site wide Deed Notice (PAP-00061603-04).

According to the *Baseline Ecological Evaluation*, dated September 2008, soil in two areas of the property contained PCBs at levels above 50 mg/kg. The contaminated soil from these two areas totaled approximately 400 cubic yards and were excavated under a self-implementing remedial action (PAP-0062469).

The *Remedial Investigation Report/Remedial Investigation Workplan*, dated October, 2, 2007 states that remedial actions to date included off-site delineation of PCBs along the southeastern property line to New Jersey Residential Direct Contact Soil Cleanup Criteria (RDCSCC) and removal of soil to address residual petroleum constituents (PAP-00062226). It was estimated there were approximately 5,000-6,000 cubic yards of contaminated soil with PCBs above the RDCSCC of 0.49 mg/kg beyond the southeastern property line (PAP-00062233). The document proposed excavation of soil

containing PCBs at concentrations greater than the RDCSCC and New Jersey Nonresidential Direct Contact Soil Cleanup Criteria (NRDCSCC) and establishing a Deed Notice (PAP-00062237).

According to the *Remedial Action Report/Remedial Action Workplan*, dated November 14, 2008, between September and October 2008, approximately 6,200 cubic yards of soil containing PCB concentrations greater than RDCSCC were removed from the Central Avenue Right of Way. Following sampling, it was determined approximately 5,200 cubic yards would be reused onsite and 1,000 yards would be appropriately disposed offsite (PAP-00061630). A site wide vegetative cap was proposed for the site (PAP-00061635). A site wide Deed Notice was filed with the Town of Kearny to designate the land use was for nonresidential purposes (PAP-00061635).

According to the *Baseline Ecological Evaluation*, dated September 2008, approximately 35,000 square feet of off-site PCB contaminated soil was removed in August 2008 (PAP-00062470).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

BENJAMIN MOORE & CO

Facility Name, Address and Size: Benjamin Moore & Co (Benjamin Moore), 134 Lister Avenue, Newark, New Jersey, 07105 (the BMC Plant); approximately 15.6 to 17 acres (PAP-00238238; PAP-00725042). The BMC Plant is bordered by the Passaic River on its north side and Lister Avenue on its south side (PAS-00014454). According to a *Generator Inspection Report*, prepared by the New Jersey Department of Environmental Protection (NJDEP) Solid and Hazardous Waste Enforcement Bureau (the *Generator Inspection Report*), dated December 10, 1996, the BMC Plant had 190 employees and operated 15 shifts a week (PAP-00238238).

1. **Business Type:** Benjamin Moore is a paint manufacturing company (PAP-00238576; PAP-00725044).

2. **Time Period of Ownership/Operations**

Operator:	1925 to Present (Block 2438, Lots 40 and 62) 1958 to Present (Block 2438, Lot 34)
Owner:	1925 to Present (Block 2438, Lots 40 and 62) 1958 to Present (Block 2438, Lot 34) (PAP-00238574-75)

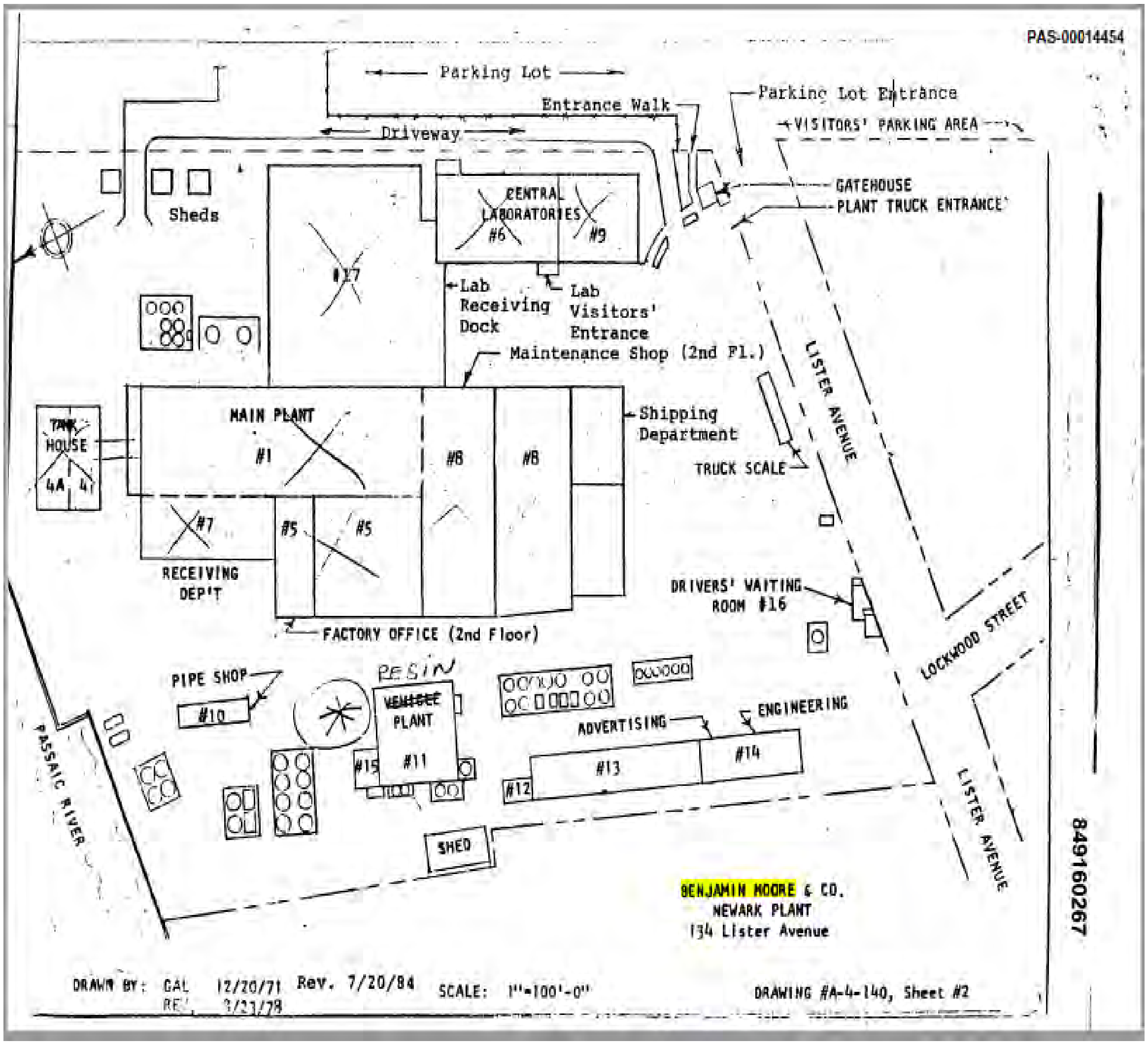
3. **Operational History/COC Use and Presence at the Facility**

Over time, Benjamin Moore's manufacturing operations have consisted of: (a) manufacture of latex and alkyd resins (known as "vehicles"); (b) manufacture of latex and alkyd (oil-based, or solvent-based) paints, colorants, and technical coatings; and (c) packaging and distribution of finished products (PAP-00725044; PAS-00055155). The solvents used in alkyd paints contain mostly mineral spirits (PAP-00725044). Benjamin Moore has manufactured and packaged alkyd paint at the BMC Plant for distribution since 1925 (PAP-00725044; PAS-00055155). Benjamin Moore added the manufacture of latex paints in 1955, alkyd resin in 1959, latex resin in 1963, and colorants in 1965 (PAS-00055155-57). Benjamin Moore also manufactured aerosol paint sprays from 1966 to 1980 (PAS-00055155). Alkyd paints were phased out from production at the BMC Plant by 2012. As of 1993, "the facility produc[ed] 8 million gallons of paint per year which consist[ed] of 80 percent water-based [(i.e. latex)] paints and 20 percent solvent-based [(i.e. alkyd)] paints" (PAP-00238576). According to the *Terraphase Site Assessment Report,* dated April 16, 2019 and prepared for Benjamin Moore (the Site Assessment), the BMC Plant currently only manufactures latex vehicle, latex paints, and colorants (PAP-00725044).

According to the Site Assessment, mercury compounds were used by Benjamin Moore in the manufacture of paints from approximately 1953 until as late as 1971 (PAP-00725047). Lead compounds were used from approximately 1951 until at least 1971. After 1971, lead chromate was added to paints; however, these specialty paints only comprised 0.4 percent of Benjamin Moore's total paint production (PAP-00238576; PAP-00725047-48).

According to the 1993 *Preliminary Assessment*, prepared by the NJDEP (the Preliminary Assessment), the spent solvents from these specialty paints were kept separate from other waste solvents (stored in 55-gal drums) and recycled in subsequent batches (PAP-00238576). Benjamin Moore used raw material containing trace amounts of copper compounds in pigments used in the manufacture of paint. Because no specific information regarding the timing and use of copper at the BMC Plant is included in the available file materials, the Site Assessment assumed copper may have been used during the entire manufacturing history (PAP-00725048). The facility stopped using mercury in paint in 1971 (PAP-00238576).

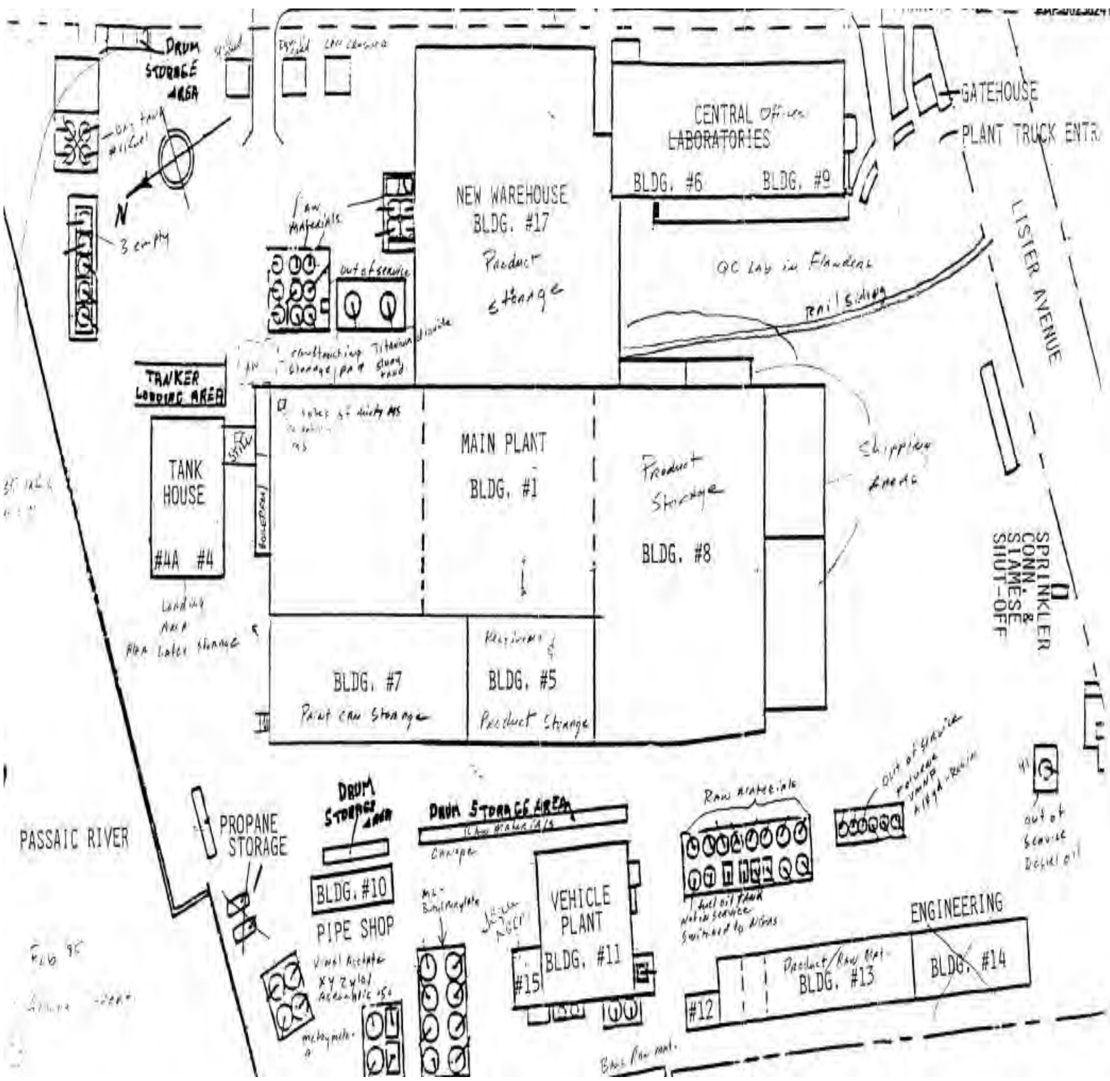
In 1984, the facility layout was as shown below.



(PAS-00014454)[1]

[1] Except for the yellow highlighting, PAS-00014454 has not been altered by AlterEcho to include the handwritten notes, which are original to the document as produced in this Allocation.

As described in the *Generator Inspection Report*, Benjamin Moore has several aboveground storage tanks (ASTs) for raw materials (resins and oils) and paint additives located at the BMC Plant (PAP-00238237-39). The ASTs are located in Buildings 4 and 4a and outdoors in diked areas located directly northeast of the central building complex (PAP-00725048). The ASTs do not store hazardous waste, and there are no other hazardous waste storage tanks or underground storage tanks (USTs) onsite (PAP-00238239; PAP-00725048). There are several additional storage areas, including areas for raw materials (Building 4 and 4a and Building 7) and for finished product (Building 5) (PAP-00725043). Product loading areas included Building 8 and Building 4, and the tank trailer loading area (PAP-00238239). Distribution areas are designated as Building 8 and Building 17 (PAP-00725043).



(PAP-00238241[2])

[2] PAP-00238241 has not been altered by AlterEcho to include the handwritten notes, which are original to the document as produced in this Allocation.

According to the Site Assessment, various processes result in the generation of waste from the BMC Plant, specifically the manufacture of alkyd paint, tank and equipment cleaning, washing of equipment with solvents, and washing of equipment with caustic solution. There are four waste streams generated through these processes: D001 (ignitable mineral spirit waste and paint sludge), D002 (sodium hydroxide or caustic soda), and F003 and F005 (spent non-halogenated solvents) (PAP-00725053). According to the *Generator Inspection Report*, in 1996 the facility generated the following hazardous waste streams: waste oil/mineral spirit based paints, classified as D001 (ignitable) waste; caustic solution (sodium hydroxide), used for process tank cleaning and classified as D002 (corrosive) waste; and waste latex paint related materials, classified as X900 waste (a NJDEP-specific non-hazardous process waste code) (PAP-00238239). According to the Site Assessment, based on the historic use of certain OU2 COCs in products, it is possible that trace amounts of OU2 COCs (lead, mercury, copper, and naphthalene) may have been present in wastes generated at the BMC Plant and discharged to the Passaic Valley Sewerage Commission (PVSC) system. However, as stated, any waste would have been pre-treated prior to discharge and there is no data to suggest more than *di minimis* quantities of OU2 COCs reached the Passaic River from Benjamin Moore (PAP-00725053). “The overwhelming evidence points to the fact that Benjamin Moore’s waste was predominantly non-hazardous waste” (PAP-00725063).

Benjamin Moore recycled waste streams back into product or reused waste material as a cleaning solution as much as possible. According to the Site Assessment, “to the extent waste may have contained trace elements of certain [OU2] COCs, the waste was primarily recycled and reused in the next batch of product or disposed off-site.” Historically, waste taken off-site may have contained trace amounts of [OU2] COCs, including copper, lead, or mercury present in wash water or solvent wash (PAP-00725063). None contained either PCBs or dioxin-related materials (PAP-00725064).

At the time of the *Generator Inspection Report*, 35-55 gallon drums of latex paint waste (X900) and four 55 gallon drums of oil/mineral spirit based paint waste (D001) were found in the waste storage area (PAP-00238239). All hazardous waste drums were labeled and displayed accumulation start dates. All hazardous wastes were shipped to North East Chemical Corp. in Cleveland, Ohio. Non-hazardous latex waste were shipped to the East Liverpool landfill in Warren, Ohio (PAP-00238239).

4. Identified COCs

- PCBs (used, detected)
- PAHs (used, detected)
- Copper (used)
- Lead (used, detected)
- Mercury (used)

PCBs

According to the Lehnert Affidavit, one part of the manufacturing process utilized a heat exchange system that required the use of substance known as Therminol, which contained PCBs (PAP-00238467-68).

According to the Terraphase Site Assessment, Benjamin Moore utilized a closed-loop heat transfer system in the alkyd manufacturing operation located in the former Building 11. The heat transfer fluid "was circulated in heat transfer 'jackets' external to the pressurized high temperature alkyd reaction vessels called kettles and was used to provide indirect/non-contact precision heating" up to 650 degrees Fahrenheit (PAP-00725050). According to the Site Assessment, this process was in operation using Therminol FR (a PCB-containing oil) from approximately 1969 to1972, and later Therminol 66 (a non-PCB-containing oil) from approximately 1972 to 1977. Therminol FR was never combined with, nor came in contact with, Benjamin Moore's product (PAP-00725050). Benjamin Moore sent spent Therminol FR to Monsanto to be disposed of by incineration (PAP-00238150). According to the February 1990 letter, Monsanto received 32 drums of heat transfer fluid from the Benjamin Moore facility in Newark, NJ (PAP-00238150). In 1982, Benjamin Moore confirmed through sampling that a sample of Therminol 66 submitted by Benjamin Moore did not contain PCBs above 1ppm (PAP-00238362).

A 1973 Benjamin Moore memorandum states that "Therminol leaks must be attended to promptly and a program should be instituted at once to replace faulty old type valves with new leak-proof ball valves" (PAP-00725212). According to the Site Assessment, because of the prior use of Therminol FR in Building 11, samples of concrete were collected for laboratory analysis. As a result of this sampling, concrete was identified with PCBs, with the highest concentrations of PCBs found in the area where the Therminol heater was located. Despite the known minor leaks associated with the Therminol heater, "[t]here was no evidence that minor leaks that may have occurred from the Therminol heater could have escaped the building and concrete slabs and no direct pathway from this portion of the building (e.g., floor drains, etc.)" (PAP-00725051).

According to the Site Assessment, "Benjamin Moore had transformers located outdoors at the BMC Plant that likely contained PCB-oils until the early- to mid-1980s. PCBs were also likely present in fluorescent light ballasts at the BMC Plant" (PAP-00725049). The record reflects there were no leaks from transformers or ballasts.

According to the 2018 RAR, during June and July 2001, Benjamin Moore installed a new water line for the fire sprinkler system at the facility. The line was installed in a trench dug on the western portion of the site. During the excavation of the trench, it appeared that soils in Area of Concern (AOC) 1, may have contained PCBs (PAP-00724499).

In June and July 2001, Ramboll collected four soil samples (TR1A, TR1B, TR2A, and TR2B) from each end of the sprinkler line trench. These samples were analyzed for PCBs. PCBs were not detected in samples TR1A, TR1B, or TR2B. Soil sample TR2A contained Aroclor-1242 at a concentration of 4.7 milligrams per kilogram (mg/kg). A limited volume of soil was later removed from boring TR2A and disposed off-site at CWM Chemical waste Services, LLC landfill in Model City, NY (PAP-00724499).

The 2018 RAR also notes that Benjamin Moore received correspondence from the NJDEP, dated November 1, 2004 and June 19, 2007 requiring delineation of the PCB impacts identified in the vicinity of TR2A. Soil samples were collected in August 2006, with supplemental sampling in December 2006, July 2007, and August 2007. The

delineation study concluded that the extent of PCB contamination extended to a maximum depth of approximately 10 feet below ground surface (ft bgs) over a 510 square foot area. The results of this delineation study suggested that given historic fill conditions in the region, coupled with only the sporadic occurrence of PCBs at low concentrations, the identified PCBs were attributed to historic fill (PAP-00724500). Benjamin Moore received approval for the Remedial Investigation Report/Remedial Action Work Plan and Remedial Action Work Plan Addendum in a February 14, 2012 correspondence from the NJDEP (PAP-00724500). According to the report, the majority of the site is covered with asphalt pavement or concrete and is surrounded by a 100-year flood wall, preventing stormwater from reaching the Passaic River (PAP-00724499-50).

Benjamin Moore also had hazardous waste manifests that stated that Benjamin Moore disposed two drums of PCBs in liquid form in 1985, which was around the time that Benjamin Moore was changing out oils in transformers that may have been PCB-containing. Additionally, Benjamin Moore disposed fluorescent light ballasts containing small capacitors noted as PCB waste in 1994 and 2009, and a transformer in 1999 (PAP-00238423-426; PAP-00725055).

Dioxins

As stated above, according to the 2018 RAR, during June and July 2001, Benjamin Moore installed a new water line for the fire sprinkler system at the facility. The line was installed in a trench dug on the western portion of the site (PAP-00724499).
In June and July 2001, Ramboll US Corporation collected four soil samples (TR1A, TR1B, TR2A, and TR2B) from each end of the sprinkler line trench. These samples were analyzed for dioxins. Dioxin levels were converted to 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) Toxic Equivalents (TEQs), and all four results (0.001 microgram per kilogram [µg/kg], 0.0033 µg/kg, 0.0038 µg/kg, and 0.0093 µg/kg) were at least an order of magnitude below both Residential (0.051 µg/kg) and Industrial (0.72 µg/kg) EPA Regional Screening Levels. During the excavation of the trench, it appeared that soils in AOC 1 may have contained dioxins; however, based on available references Benjamin Moore did not use or store dioxin containing materials at the site; therefore, the source of onsite dioxin detections is unknown (PAP-00724499).

According to the Site Assessment, dioxin identified on site is “the result of deposition on the Benjamin Moore property, either by wind or flood, from the nearby Diamond Alkali property and [is] not the result of discharges at the BMC Plant from Benjamin Moore” (PAP-00725061).

According to the 2018 RAR, “[t]he majority of the site is covered with asphalt pavement or concrete and is surrounded by a 100-year flood wall, preventing storm water from reaching the underlying contaminated soil or the Passaic River” (PAP-00724499-50).

PAHs

Benjamin Moore used and stored certain PAHs, which were additives in certain products. According to the Site Assessment, Benjamin Moore used naphthalene as additives to paint products (PAP-00725065).

A fire-water sprinkler failure at the BMC Plant occurred in December 2007 south of Building 11, initiating an investigation that was consolidated with ENVIRON's then-ongoing investigation at the BMC Plant. Soil samples were collected and analyzed for Priority Pollutant volatile organic compounds (VOCs) with a 10- compound library search (VOC+10), Priority Pollutant Base Neutral SVOCs with a 15-compound library search (BN+15), Priority Pollutant metals (PP metals), Priority Pollutant pesticides (PP pest), Total Petroleum Hydrocarbons (TPHCs), and PCBs (PAP-00724500). Benzo(a)anthracene (0.93 mg/kg, MW02; 4.5-5 ft bgs) and benzo(b)fluoranthene (1.1 mg/kg, MW02, 4.5-5 ft bgs) concentrations exceeded the Residential Direct Contact (RDC) Soil Cleanup Criteria (SCC) and RDC Soil Remediation Standards (SRS) (PAP-00724814).

According to the 2018 RAR, "[t]he majority of the site is covered with asphalt pavement or concrete and is surrounded by a 100-year flood wall, preventing storm water from reaching the underlying contaminated soil or the Passaic River" (PAP-00724499-50).

Copper

According to Benjamin Moore's Supplemental Response, Benjamin Moore used raw material containing "trace amounts" of copper compounds in pigments in the manufacture of paint (PAS-00055010).

The Selected Substance Report, lists copper as a substance that was manufactured, processed, formed, repackaged, released, used, disposed of or stored at the BMC Plant (PAP-00238087-88). Copper phthalocyanine complexes were used as pigments in paint. The total copper substance released to the PVSC sanitary sewer was estimated to be 5 pounds per year, which was calculated to include any quantity of copper that may have been in the water supply from the City of Newark; the sewerage analysis was 0.144 ppm (PAP-00238095, 99). Sanitary wastes from the BMC Plant went directly to the PVSC system, where the waste was treated by the PVSC and then discharged to the New York Bay (PAP-00238579). Available file materials did not provide a specific timeframe over which these discharges occurred.

Lead

Benjamin Moore used lead compounds in the manufacture of paint from approximately 1951 until at least 1971 (PAP-00725047; PAP-00238576). According to Benjamin Moore's *Supplemental Response to EPA's First and Second Request for Information under CERCLA § 104(e)*, dated November 22, 1996 (Benjamin Moore's Supplemental Response), "At about the same time it eliminated mercury compounds in its latex paints [in 1968], Benjamin Moore also began eliminating the use of lead compounds" (PAS-00055009). According to an affidavit of employee Garry Lehnert (the Lehnert Affidavit),

yellow chromate, also known as lead chromate, was added to paints at the BMC Plant after 1971 (PAP-00238468); however, lead-containing specialty paints only comprised 0.4 percent of Benjamin Moore's total paint production (PAP-00238576).

The 1980 *Selected Substance Report*, prepared by Lawrence N. Berg for Benjamin Moore (the Selected Substance Report), lists lead as a substance that was manufactured, processed, formed, repackaged, released, used, disposed of or stored at the BMC Plant (PAP-00238087-88). Lead compounds were used as pigments and rust preventive agents in industrial maintenance coatings (PAP-00238096).

According to the *Preliminary Assessment*, "The spent solvents from . . . [lead-containing] paints were kept separate from other waste solvents (stored in 55-gal drums) and recycled in subsequent batches" (PAP-00238576). Lead-containing paint sludge was also stored separately and disposed off-site (PAP-00725048). As reported in the Selected Substance Report, the total amount of lead released to the PVSC sanitary sewer was estimated to be 36 pounds per year, which would include any quantity of lead that may have been in the water supply itself. The actual sewerage analysis was 0.31 parts per million (ppm) (PAP-00238096, 99). Sanitary wastes from the BMC Plant went directly to the PVSC system, where the waste was treated by the PVSC and then discharged to the New York Bay (PAP-00238579).

According to the 2018 Remedial Action Report, conducted by Ramboll US Corporation (the 2018 RAR), lead was identified in Historic Fill at the site and was within the range of Target Contaminant Concentrations of Historic Fill Material (PAP-00724501). Lead concentrations were addressed with the historic fill by an engineering control (i.e. cap) and a deed notice at the BMC Plant (PAP-00724504).

Waste disposal manifests from 1980 to 1994 stated that lead and lead-containing compounds were disposed to permitted disposal facilities (PAP-00238369-426).

Mercury

Benjamin Moore used mercury compounds in the manufacture of certain red paints and a biocide in latex paints from approximately 1953 until approximately 1968/1971 (PAS-00055009; PAP-00238468). According to Benjamin Moore's Supplemental Response, "In 1968, Benjamin Moore stopped using raw materials that contained mercury compounds in the manufacture of paint; mercury compounds were a common component of biocides - used to prevent mildew in water (latex) based paints. Benjamin Moore's elimination of mercury from its paint is verified by a June 1972 Consumer Reports article that tested exterior latex paints and commended Benjamin Moore for eliminating mercury from its paints although mercury was used by other paint manufacturers at the time of the article" (PAS-00055009; 59).

According to Benjamin Moore's Supplemental Response, "The only 'waste water' produced in its paint manufacturing process that BMC is aware of . . . was 'wash water'" (PAS-00055012). Wash water is an industry-specific term for waste water that results from rinsing equipment used in latex paint manufacture (PAS-00055012). According to the Site Assessment, the United States Environmental Protection Agency

(EPA) has not listed wash water as a hazardous waste (PAP-00725053). Benjamin Moore began recycling wash water "in 1955 when the plant began producing latex paint. . . . When the wash water could not be recycled because of its color, it was placed in a [lagoon], the water allowed to percolate or evaporate and the dried latex collected and disposed of as solid waste. NJDEP analysis of aerial photos of the plant concluded that a definite [lagoon] first appeared in 1971. However, one employee remembers that there was a [lagoon] settling system in use in 1966. This [lagoon] basin/system eventually became part of the stormwater retention system" (PAS-00055012).

The Selected Substance Report states that a lagoon was used onsite from 1954 to 1970 for the disposal of latex emulsion paint containing mercury. The amount disposed was noted to be unknown (PAP-00238088). The cover letter to the Selected Substance Report notes that the lagoon system was used to dispose of the wash water used for cleaning latex paint production machinery. Therefore, the wash water contained very diluted latex paint. The system consisted of two lagoons, one of which would be used until it filled up at which time they switched to the second one while the first lagoon dried out as a result of natural evaporation. The solid material was then dug out with a backhoe and hauled away by truck. Based on a typical paint recipe, the selected substance content of the solid material in the lagoons was in the neighborhood of 0.17% mercury. Phenol mercuric acetate was used as a mildewcide and bactericide during the 1950's and 1960's. Use of the lagoons was terminated in 1970 by order of top management. The letter states that no records were kept of the amount of the material pumped into the lagoon or the amount carted away (PAP-00238098-99). No information regarding sampling or remediation in the lagoon area was located.

According to a Benjamin Moore letter dated July 31, 1980, "Use of the lagoons was terminated in 1970 by order of [its] top management." No records were kept of the amount of the material pumped into the lagoons or the amount carted away (PAP-00238098-99). According to the Site Assessment, it is unlikely that contaminants in wash water, if any, would have adversely affected the Passaic River sediment through stormwater runoff. This is because the solids in wash water naturally settled to the bottom of the lagoon and were not likely dissolved in surface water. Solids accumulated in the lagoons were periodically removed and transported off-site for disposal and would not be expected to impact the stormwater and/or the river (PAP-00725064). No information regarding sampling or remediation in the lagoon area was located in the available file materials. The *Report on Flood Control for Manufacturing Plant of Benjamin Moore & Company* (the Flood Control Report), dated June 28, 1961, notes that on three occasions since the Main Plant Building was constructed in 1925, floodwater had risen above the first floor level (PAP-00238186).

Waste disposal manifests from 1980 to 1994 stated that mercury were disposed to permitted disposal facilities (PAP-00238369-426).

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[3]

According to the 2018 RAR, Historic Fill was identified during Ramboll investigations conducted at the BMC Plant. The 2018 RAR notes that "[H]istoric fill contamination is ubiquitous in this area . . . . The NJDEP approved [an] action to address historic fill contamination present on-site in its correspondence dated February 14, 2012" (PAP-00724498-501, 507).

The NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[4] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List (TCL) for PAHs and Target Analyte List (TAL) for metals, including lead, copper, mercury, and the OU2 PAH COCs.[5] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[6]

Ramboll identified metals, PAHs, and PCBs within Historic Fill found on-site. Except for naphthalene, identified metals and PAHs were within the range of target contaminant concentrations in typical Historic Fill material. Ramboll attributed the naphthalene detection to Historic Fill; however, based on the semi-volatile organic compounds (SVOC) contaminant mix in the fill material (PAP-00724507).

Additionally, "[g]iven historic fill conditions in the region, coupled with only the sporadic occurrence of PCBs at low concentrations, Ramboll determined that the PCBs are the result of the historic placement of fill." Ramboll's attribution of PCBs to Historic Fill was approved by Benjamin Moore's Licensed Site Remediation Professional (LSRP) and accepted by the NJDEP (PAP-00725050).

[3] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized Historic Fill).

[4] *Characterization of Ambient Levels of Selected Metals and PAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Oher Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

[5] New Jersey Department of Environmental Protection (NJDEP), N.J.A.C. 7:26E Technical Requirements for Site Remediation, Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated Historic Fill Technical Guidance (April 2013) as NJDEP believed that the tables list of Historic Fill constituents was too restrictive].

[6] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

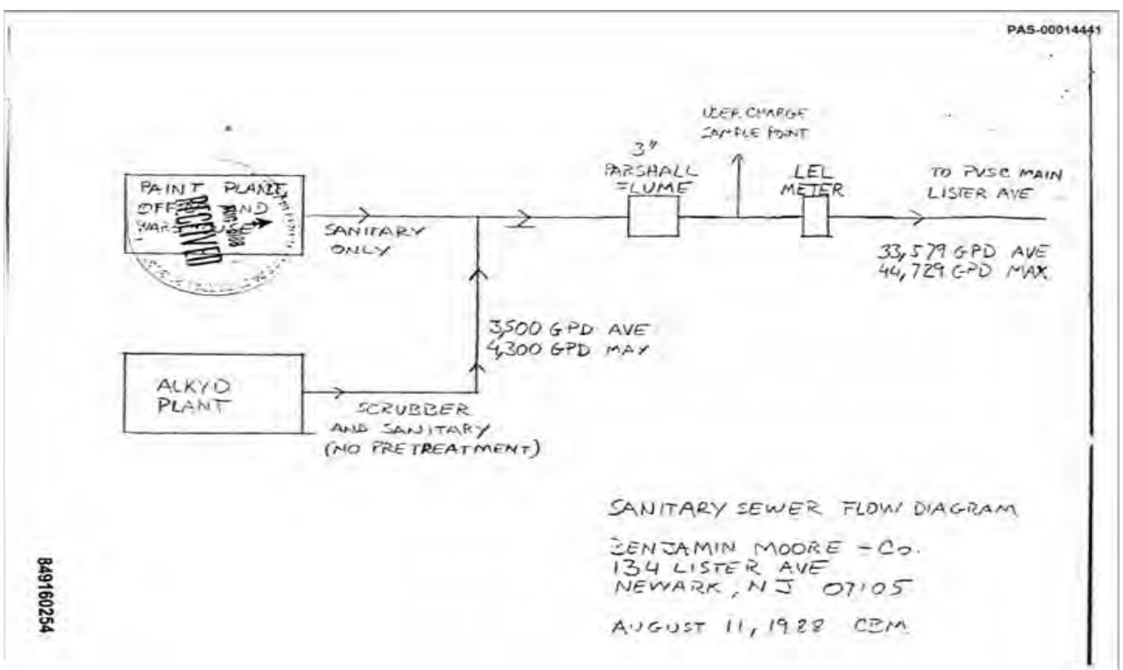
The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00725057).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	2,200 mg/kg
Benzo(a)anthracene	42 mg/kg
Benzo(a)pyrene	31.6 mg/kg
Benzo(b)fluoranthene	39.1 mg/kg
Benzo(k)fluoranthene	32.9 mg/kg
Dibenzo(a,h)anthracene	7.61 mg/kg
Indeno(1,2,3-cd)pyrene	17.7 mg/kg

5. COC Pathways

Sanitary Waste and Stormwater

According to a Benjamin Moore's Response to the Environmental Protection Agency's Request for Information under CERCLA 104(e), dated February 21, 1995, the BMC plant has always had a segregated plant stormwater system because of its location adjacent to the Passaic River (PAS-00055368; PAS-00055192, 96). A depiction of the location of the storm sewer and outfall, and a separate on-site stormwater outfall at the BMC Plant can be found on a Passaic River Study Area map (PAS-00055368). The sanitary waste system is depicted and further described below.



(PAS-00014441)

Sanitary Sewer

According to the Site Assessment, "Sanitary waste has been discharged directly to the PVSC sewer system since operations began at the BMC Plant in 1925 (PAP-00725051). Benjamin Moore first discharged sanitary waste under permit No. 20403112 and later under permit No. 20250002. According to Benjamin Moore's Passaic Valley Sewerage Commission Application for a Sewer Permit, approximately 8,183,261 gallons of sanitary waste was discharged to the PVSC under permit No. 20403112 from October 1994 until October 1995 (PAS-00055119). According to the Site Assessment, Benjamin Moore's "[p]ermit conditions require continuous monitoring of the effluent's lower explosive limit (LEL), as well as collection of a 24-hour composite sample for biological oxygen demand (BOD), total suspended solids (TSS), arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, and zinc to be reported to the PVSC on a monthly basis" (PAP-00725051).

PVSC permit 20250002 identified two outlets (one industrial, one sanitary) with approximately 0.019 million gallons per day (MGD) of industrial wastewater discharged in 2006 (PAP-00478668) and approximately 0.009 MGD in 2016 (PAP-00478689). PVSC permits 20403112 and 20250002 required monthly measurements for volume from both outlets, but volume limits were not specified.[7]

According to *Benjamin Moore's Supplemental Response*, "For a short period, 1967-1968, excess wash water was diluted with water to lower the solids content and then permissibly disposed in the sanitary sewer. The wash water was subsequently collected and sent to Earthline, a waste treatment facility next door to BMC, which then became SCA and finally Chemical Waste Management (CMW). There are no known records of these waste water shipments although a BMC employee who used to work for the SCA/CWM remembers treating BMC's wash water (flocculation of solids). In 1980, better use of recycling techniques led to the complete recycling of all wash water. There was no 'wash water' produced prior to 1955, when the plant began producing latex paint. Consequently, there are no diagrams of waste water collection or disposal systems" (PAS-00055012). According to the Site Assessment, Benjamin Moore never discharged solvent wash, which is hazardous due to its ignitability, to the PVSC sanitary sewer (PAP-00725054).

Data associated with Benjamin Moore's discharge to the PVSC showed low levels of copper (0.449 milligrams per liter [mg/l]), lead (<0.010 mg/l), and mercury (<0.0004 mg/l) in the discharge from November 1995 (PAS-00055118-122). According to the Site Assessment, these concentrations were below discharge thresholds (PAP-00725051). According to the Site Assessment,, "[w]aste manifests and notes from [Resource Conservation and Recovery Act] RCRA and NJDEP inspections conducted from 1978 until 1994 demonstrate Benjamin Moore was disposing waste containing lead and mercury offsite, confirming Benjamin Moore was not disposing these [lead and mercury] wastes to the PVSC" (PAP-00725055).

[7] This Report was revised to include documents received on May 26, 2020. The additional documents did not change Benjamin Moore's previous certification.

According to the Site Assessment, the PVSC has owned and operated a stormwater and sewage (industrial and sanitary wastes) collection system since 1924. The collection system carries stormwater and sewage to the PVSC treatment plant, which was installed in 1937. Once stormwater and sewage arrives at the treatment plant, they are treated to reduce solids and contaminants and then discharged primarily to the PVSC's primary outfall in the New York Bay. PVSC has a second outfall where waste is discharged at the mouth of the Newark Bay, but the outfall is used as a backup and like the primary outfall, all waste sent to this outfall is treated. Unlike other facilities which connect to PVSC sewer lines that are controlled with bypasses or have automatic discharges from combined sewer overflow, Benjamin Moore's stormwater was not connected to the PVSC system and the site's sanitary lines are "directly connected to the PVSC treatment plant and there has never been any bypass or CSO [combined sewer outfall] outfall between the BMC Plant and the PVSC treatment plant. . . . PVSC treated all waste sent to the [PVSC's] treatment plant before discharging to the New York Bay or backup outfall, and therefore Benjamin Moore's sanitary waste was treated before any discharge. No untreated waste from the BMC plant would have been discharged by PVSC to the River" (PAP-00725052). While it is possible that OU2 COCs from Benjamin Moore's operation (lead, mercury, copper, or naphthalene) were present in Benjamin Moore's sanitary wastes, it was a rare occasion that PVSC disposed of waste to its second outfall – any discharges from this outfall would be pretreated to stay within PVSC's discharge permit limitations (PAP-00725053).

Stormwater

According to the Site Assessment, Benjamin Moore currently collects stormwater at the BMC Plant using an underground stormwater system that discharges to a pump house on the northern end of the site, as recommended by a the Flood Control Report (PAP-00725052; PAP-00238199-201; PAS-00055012-13). Benjamin Moore implemented on-site secondary containment measures for tanks and chemical handling areas to protect the storm sewer from contamination via these areas (PAP-00725049). Water from the pump house is discharged to the Passaic River via connection to the City of Newark 72-inch storm water outfall, east of the pump house, which is situated on the Benjamin Moore property. On an occasion of heavy flooding, a manual pump in the pump house is evacuated when water rises to a predetermined level, and a wet well is used to pump the water either directly to the river via Benjamin Moore's 14-inch discharge pipe or to the City of Newark storm sewer. Benjamin Moore's stormwater discharge is permitted under NJPDES General Permit No. NJ0088315 (PAP-00725052). "Neither the direct (to the River) / emergency discharge system nor the normal storm water discharge system is connected to any process on the property. The sole function of both systems is to discharge storm water and any water that might collect within the property through rain, infiltration, or flood" (PAS-00055013).

According to the Site Assessment, Benjamin Moore directly discharged stormwater to the Passaic River via a 10-inch outfall that was sealed sometime after 1961 (PAP-00725052). For some time after the pump house was in use, Benjamin Moore also utilized a stormwater retention basin located on Lot 62, which was situated at the former lagoon location (PAP-00725052). The stormwater retention retained stormwater on site

rather than allowing it to enter the stormwater collection system and flow to the Passaic River (PAP-00725051).

The Flood Control Report recommended that the entire BMC Plant be surrounded by a 100-year flood wall (PAP-00238185-206). The wall was installed and is currently in place (PAS- 00055196; PAP-00725049). While the exact date of the installation was unknown, the wall was likely installed in response to the recommendations in the Flood Control Report (PAS-00238471; PAS-00238476). One record states the wall was in place by at latest 1986 (PAP-00238765). As previously discussed, the *Flood Control Report* notes that on three occasions since the Main Plant Building was constructed in 1925, floodwater had risen above the first floor level. These floods reportedly damaged manufactured products stored in the building, and raw materials in cars on Railroad Siding No. 1 (PAP-00238186). The Flood Control Report provides no information about the type of raw material damaged, but according to the Site Assessment, only the two latter flood events could have possibly come in contact with OU2 COCs, namely copper, lead, or mercury, if any such material was outside of designated storage containers. Benjamin Moore was not using Therminol FR during this time period (PAP-00725047-48, 50).

The City of Newark has an easement for the City of Newark storm sewer and outfall located on Benjamin Moore's property and is responsible for maintaining the storm sewer. Other industrial properties in the vicinity of Benjamin Moore discharge stormwater to the City of Newark stormwater system, which discharges in the outfall located on the BMC Plant (PAP-00725052). These facilities include the facilities connected to allocation parties 21st Century, Newark Group, Inc., STWB, and Atlas Refinery.

The *Flood Control* Report also stated that rain water runoff was to be directed through storm drains towards a pump station located alongside the River. This water was then to be placed in a cement holding sump. There were to be two pumps in the station. A manual pump was to direct the stormwater to the Newark storm system, where it would be treated by the PVSC (PAP-00238579-80). The *Preliminary Assessment* confirms that this approach was put into place. It also notes that on an occasion of heavy flooding, the manual pump was evacuated when the water rose to a predetermined level and a wet well was used to pump the water either directly to the river or discharge it to a storm sewer (PAP-00238579-80).

On August 15, 1969, Benjamin Moore received an Administrative Order from the New Jersey Department of Health (NJDOH), Water Pollution Control Program (WPCP), citing Benjamin Moore for the discharge of industrial waste and other polluting matter into the Passaic River (PAS-00055021). Benjamin Moore responded in an October 20, 1969 letter, which clarified that investigations at the BMC Plant revealed some incidents of latex wash liquid being discharged into the flood control system via a practice of rinsing strainers and thereby eventually into the Passaic River (PAS-00055008, 29). The letter stated that operators had subsequently been instructed not to do so (PAS-00055029; PAP-00725052). Benjamin Moore's solution to this problem was to collect and pump this rinse water "into the same storage area where all of the present latex wash from the paint plant [was] collected" (PAS-00055008, 29). According to Benjamin Moore's

Supplemental Response, "[i]n February 1973, after Benjamin Moore sought to clarify the status of the 1969 order, the State again tested some effluent discharged from Benjamin Moore's storm water system. This test resulted in similar problems with color, turbidity, etc." (PAS-00055008). According to a March 26, 1973 letter from Benjamin Moore to NJDEP, "[t]he effluent that [was] tested came from the discharge pipe of [the] underground storm water drainage system. The feeds to that system were catch basins in [the] yards and roof drains" (PAP-00055044). At that time, Benjamin Moore initially thought that the problem was caused by infiltration of river water into the sump, but Benjamin Moore decided to check the "entire underground drainage system, which feeds the drainage sump" (PAS-00055044). Further investigation as to the source of the exceedances revealed that the practice of rinsing strainers was not the result of a discharge; rather three drains in Building 11 were discharging to the storm sewer system from a portable kettle cooling operation, a reactor cooling system, and a sink in the laboratory" (PAP-00725052; PAP-00238493; PAS-00055009; PAS-00055196). Further "These drains were subsequently connected to the PVSC on or before May 1973 (PAP-00725052; PAS-00055049; PAS-00055196; PAP-00238493).

According to the Site Assessment, there is no indication that these drains allowed process waste or OU2 COCs to enter the storm sewer system by this inadvertent connection and "no COCs were associated with these water sources (PAP-00725052). All other drains at the BMC Plant were connected to the sanitary sewer, and "[t]he main paint plant and the vehicles manufacturing department never had floor drains" (PAS-00055196).). It should be noted that from approximately 1968 until the spring of 1972, Benjamin Moore used Therminol FR, a fire-resistant PCB-containing heat transfer fluid, in a closed loop heater system associated with the manufacture of alkyd resins in Building 11 at the Benjamin Moore facility. According to *Benjamin Moore's Supplemental Response*, "Although there was a 'release' of water that allegedly caused problems with turbidity, etc., there is no evidence that this release contained hazardous materials. Neither turbidity nor color is related to the presence or discharge of hazardous materials. The water discharged from cooling the portable kettles would not have come in contact with any product material, so it could not pick up any hazardous materials if any were present. The scrubber used in the reactor system operated only when the manhole in the reactor was opened to add certain solid ingredients and would have picked up airborne particles released only during the addition of these ingredients into the reactor when the reactor manhole was open. . . . [t]he ingredients added to the reactor and the particles captured by this system do not contain chemicals similar to the list in 104 (e) question No. 3 as can be seen in examining the air permit for the scrubber . . . . The sink was used to wash hands" (PAS-00055009). According to the Site Assessment, the water discharged from the cooling and portable kettles would not have encountered any product material or PCB-containing Therminol. The only water discharged from the reactor would have been condensate water; all other material was recycled back into the reactor. The sink drain would have carried handwashing or possibly the washing of paintbrushes, but any discharge of [OU2] COCs would have been inconsequential. In addition, COCs that may have been present in certain pigments, additives, etc. (copper, lead, mercury) were not handled in Building 11. These COCs, when present, were managed and added to paints on the second floor of Building 1 (PAP-00725052-53).

According to the *Newark Testing Laboratories, Inc. Preliminary Report # 5*, dated August 16, 1967, pollution of the Passaic River by the Lockwood Street storm sewer was observed. An "[i]nternal inspection of the storm sewer on Lister Avenue (between Lockwood St. and gate . . .) revealed a heavy discharge of pollutant into the storm sewer through eroded openings in the sewer (north side) walls. The openings were spaced irregular over a distance of 30 to 40 feet along the wall; the first openings starting at approximately 75 feet west of Manhole Y . . . . Tests and observations indicated that the sanitary sewer on Lister Avenue has corroded and eroded its way into the storm sewer."

In addition, the following tests and observations were also made:

1. "Flow in the sanitary sewer (as observed at Manhole A) was to the east -- it should have been to the west. . . .
2. Manhole B, sanitary sewer, is clogged -- no flow. Sewerage is N[ot] flowing pass this point.
3. Test of paint solids in the sanitary sewer same as in the storm sewer.
4. Dye placed in sanitary sewer (Manhole A) observed six minutes later at storm sewer Manhole Y.
5. Actual observation of pollutant and dye flowing into storm s[ewer] through eroded wall openings."

Newark Testing Laboratories, Inc. suggested that a "temporary solution of this condition would be to clean out the Lister Ave. sanitary sewer, and if possible, prohibit the disc[harg]ing of paint solids into the sanitary sewer." According to the report, "the paint solids, [in] part, are composed of polymers which tend, especially with . . . flows, to coalesce and clog the sewer" (PAS-00055352-53).

Direct Release

Benjamin Moore has only one discharge pipe that leads directly to the Passaic River. This 14-inch discharge pipe is the outfall for the backup stormwater discharge system, which is activated manually only when a certain level of stormwater accumulates in the pump house that exceeds the capacity of the normal stormwater discharge system. It is a backup since it provides an alternative if the primary stormwater discharge system is not working, as well as an emergency discharge system that supplements the primary system under flood conditions. The primary stormwater discharge system consists of a sump pump and discharge pipe which empties into the Newark City Stormwater Discharge System's 60 inch outfall to the Passaic River on the extreme eastern part of the Benjamin Moore property (PAS-00055012-13). Available file materials did not provide information on any discharge permits that may have been associated with the Benjamin Moore discharge pipe or the City of Newark 60 inch outfall.

While the 60-inch outfall is technically on the BMC Plant's property, this system and outfall is part of the Newark stormwater discharge system and is owned and maintained by the City of Newark, which has an easement across Benjamin Moore's property for this purpose. Neither the direct (to the Passaic River) / emergency discharge system

nor the normal stormwater discharge system is connected to any process on the property. The sole function of both systems is to discharge stormwater and any water that might collect within the property through rain, infiltration, or flood (PAS-00055013).

Spills

According to Benjamin Moore's Supplemental Response, "In its continuing investigation, Benjamin Moore has discovered records of several incidents when small spills or leaks occurred in which low specific gravity liquids were released to the Passaic River" (PAS-00055014). These incidents are described below:

- Inadvertent discharge related to the Order Benjamin Moore received on August 15, 1969, from the NJDOH. According to Benjamin Moore's Supplemental Response, on August 15, 1969, the Water Pollution Control Program (WPCP) of the NJDOH issued an administrative order to Benjamin Moore. In response to a Benjamin Moore inquiry for the specific details on which the order was based, in a September 4, 1969 letter the State stated that the alleged violation was based on "pollution of the Passaic River in terms of odor, turbidity, color, biochemical oxygen demand, chemical oxygen demand, ether soluble matter and suspended solids" (PAS-00055008; PAS-00055021-22, 26). As described above, Benjamin Moore resolved the inadvertent discharge by connecting three pipes in Building 11 to the sanitary sewer system (PAS-0005500-099; PAS-00055049). The copy of the order and related correspondence did not list any OU COC (PAS-00055021-22, 26).

- "On March 23, 1978, the Coast Guard notified Benjamin Moore that a Coast Guard helicopter had noticed a spill from the plant in the River. Investigation with the Coast Guard found a 55-gal drum had been punctured approximately amid ships" and part of its contents had migrated to the Passaic River. The Coast Guard saw the material floating on the surface. There is no record of the contents of the drum. However, the fact that material was floating on the surface shows it was lighter than water, and would not have contained materials that would find themselves in the river sediment" (PAS-00055014-15). According to the Site Assessment, the spilled substance "could not have contained materials that would accumulate in sediments in the River" (PAP-00725052). The associated spill report is labeled as an "Oil Spill" Report (PAS-00055068-70).

- At 12:50 PM, July 8, 1980, a valve malfunction spilled about 3,000 gallons of wash solvent. Although this was contained by the retaining dike around the tanks, about 25-50 gallons allegedly leaked from the dike into the Passaic River. Benjamin Moore reported the incident to the PVSC, the NJDEP, the Coast Guard, and called in environmental spill specialists who used absorbent pads to collect the spill where possible (PAS-00055015; PAS-00055073-74). According to the Site Assessment, "Given the date of the release, the only COC that could have been contained in the wash solvent was naphthalene, but the presence, if at all, would have been insignificant" (PAP-00725055).

6. Regulatory History/Enforcement Actions

Inspections

According to the Site Assessment, waste manifests and notes from Resource Conservation and Recovery Act (RCRA) and NJDEP inspections conducted from 1978 until 1994 demonstrated that Benjamin Moore was disposing waste containing lead and mercury offsite, confirming that Benjamin Moore was not disposing waste to the PVSC (PAP-00725055).

No additional information regarding inspections pertaining to the COCs were found in the available file materials.

Violations

According to Benjamin Moore's Supplemental Response, on August 15, 1969, the WPCP of the NJDOH issued an Administrative Order to Benjamin Moore pursuant to the provisions of R.S. 58:12-2. In response to a Benjamin Moore inquiry for the specific details on which the order was based, in a September 4, 1969 letter the State stated that the alleged violation was based on "pollution of the Passaic River in terms of odor, turbidity, color, biochemical oxygen demand, chemical oxygen demand, other soluble matter and suspended solids" (PAS-00055008; PAS-00055021-22, 26).

Permits

According to the Site Assessment, the BMC Plant maintain the following permits and registrations:

RCRA (EPA ID NJD002453242): Benjamin Moore filed a RCRA Part A Hazardous Waste Permit Application with the USEPA on November 10, 1980 and was consequently listed as a Treatment, Storage, and Disposal (TSD) facility. In correspondence dated July 27, 1983, the NJDEP stated that Benjamin Moore would be delisted from a TSD facility to generator status. In addition, the NJDEP removed storage in tanks (S02) activity from Benjamin Moore's Part A application of record, leaving only storage in containers (S01) activity. The BMC Plant was officially reclassified as a generator (EPA ID NJD002453242) on December 8, 1986 and has be listed accordingly ever since (PAP-00725057).

Sewer Connection (20403111) and NJDPES (NJ0030414): Initially, Benjamin Moore had a NJPDES Discharge to Surface Water (DSW) permit to discharge non-contact cooling water into the Passaic River. After April 30, 1982, the BMC Plant redirected the cooling water into recirculated cooling water systems. The bleed off from these systems is now directed to the sanitary sewer and is treated by PVSC. Benjamin Moore also has a Sewer Connection Permit, which allows them to discharge cooling water and all other discharges from the plant to the PVSC system. There are two discharge lines going into the PVSC system: one outlet discharge is hooked-up from the central laboratory building and the second hook-up is connected to the scrubber water from the Vehicle Plant (PAP-00725057).

NJPDES (NJ0066788): Benjamin Moore maintains a NJPDES permit for discharge to surface water of boiler blow down and compressor blow down. Benjamin Moore submitted its permit application in 1987 (15-BenjaminMoore). Due to the Clean Water Act amendments, NJDEP asked Benjamin Moore to reapply when amendments were finalized. NJDEP issued the discharge permit in 1993 (PAP-00725057).

Current NPDES Permit (NJG117897) and Basic Industrial Stormwater General Permit (NJ0088315): The BMC Plant operates under a general NPDES permit effective February 1, 2018 that expires January 31, 2023. The storm sewer is protected from chemical contamination on-site by secondary containment of the various tanks and chemical handling areas (PAP-00725057-58).

Air Permit (NJ0000003401305067): The BMC Plant operates under a synthetic minor emission Clean Air Act ("CAA") permit (PAP-00725058).

Remedial Action Permit (RAP180001): A Remedial Action Permit for Soils was established for the BMC Plant on May 7, 2018 to address contamination in soil, primarily due to the presence of Historic Fill (PAP-00725058).

Classification Exception Area (CEA): A CEA encompasses the entire BMC Plant to a depth of 50 feet bgs. The CEA was established on May 8, 2018. Specifically, the CEA addresses the historical fill contaminants in groundwater, including arsenic, benzo(a)anthracene, benzo(a)pyrene, and cadmium, that are present in groundwater due to historic fill at concentrations greater than the New Jersey Groundwater Quality Standards (GWQS) (PAP-00725058).

According to a PVSC application for a sewer use permit, approximately 8,183,761 gallons of sanitary waste was discharged to the PVSC under permit No. 20403112 (PAS-00055118-119).

PVSC Permit 20403112 was effective April 14, 1991 to April 14, 1996 (PAP-00478629) and April 14, 1996 to April 14, 2001 (PAP-00478645). From 1991-1996, volume was measured quarterly for outlet 20403111-43700-0201 and semiannually for outlet 20403112-43700-0201. From 1996-2001, volume was measured monthly; however no limits were specified for volume. Limits were specified for lead in the 1991-1996 permit: daily maximum of 690 ug/L; monthly average 320 ug/L (PAP-00478638) for outlet 20403112-43700-0201. The permit from 1996-2001 specified monthly averages (0.54 mg/L for lead, 3.02 mg/L for copper, 0.080 mg/L for mercury) and threshold values (0.029 mg/L for lead, 0.092 mg/L for copper, 0.001 mg/L for mercury) for both outlets from July 1, 1997 to April 14, 2001 (PAP-00478649).[8]

PVSC Permit 20250002 was effective April 1, 2006 to March 31, 2011 (PAP-00478666) and April 1, 2016 to March 31, 2021 (PAP-00478687). Two outlets were identified as an industrial waste outlet and a sanitary/domestic waste outlet. Measurements for volume were collected monthly, but no limits were specified for volume in both outlets (PAP-

[8] This Report was revised to include documents received on May 26, 2020. The additional documents did not change Benjamin Moore's previous certification.

00478668-71, 89-92). The permit from 2006-2011 specified monthly averages (0.54 mg/L for lead, 3.02 mg/L for copper, 0.080 mg/L for mercury) and threshold values (0.029 mg/L for lead, 0.092 mg/L for copper, 0.001 mg/L for mercury) for the industrial outlet 20250002-1 (PAP-00478671). The permit from 2016-2021 updated the limits to daily maximums (1.3 mg/L for lead, 3.98 mg/L for copper, 0.06 mg/L for mercury) and threshold values (0.1 mg/L for lead, 0.4 mg/L for copper, 0.006 mg/L for mercury) for the industrial outlet (PAP-00478692).[9]

7. Response Actions

Characterization Activities

The following is a list of response action documents identified in the available file material:

- Remedial Action Report, Benjamin Moore, Block 2438: Lots 34, 40, and 62, Newark, Essex County, New Jersey, Program Interest No. G000002021, NJDEP Case Tracking No. 01-12-12-0056-19, dated February 2018 (PAP-00724492).

- Site Assessment, Benjamin Moore & Co. (“Benjamin Moore”) 134 Lister Avenue Newark, New Jersey (“BMC Plant”) Lower Passaic River Planned Allocation of Responsibility for Operable Unit 2 (“OU2”), dated April 16, 2019 (PAP-00725041).

Remedial Activities

Benjamin Moore engaged Ramboll to conduct investigation and remediation of three AOCs: AOC-1 (PCB area), AOC-2 (Historic Fill), and AOC-3 (Historic Fill contaminants in groundwater). According to the 2018 RAR, “during June and July 2001, Benjamin Moore installed a new water line for the fire sprinkler system at the facility. The line was installed in a trench dug on the western portion of the site.” During the excavation of the trench, contractors recommended sampling for PCBs because of the concern of impact from the nearby Diamond Alkali facility. Ramboll submitted a Site Investigation in 2002. A small area of PCB-contaminated soil prompted a 2002 Memorandum of Agreement (MOA) with the NJDEP under the voluntary cleanup program to delineate PCBs in soils (PAP-00724499).

A fire-water sprinkler failure at the BMC Plant occurred in December 2007 south of Building 11, initiating an investigation into Historic Fill that was consolidated with Ramboll’s then-ongoing investigation at the BMC Plant. According to the Site Assessment, “As described in subsequent [Ramboll] reports, although the initial characterization of AOC 1 targeted PCBs, it was concluded that historic fill is present site-wide and ubiquitous in this portion of Newark”. The Historic Fill AOCs were added to the existing case (PAP-00725061).

[9] This Report was revised to include documents received on May 26, 2020. The additional documents did not change Benjamin Moore’s previous certification.

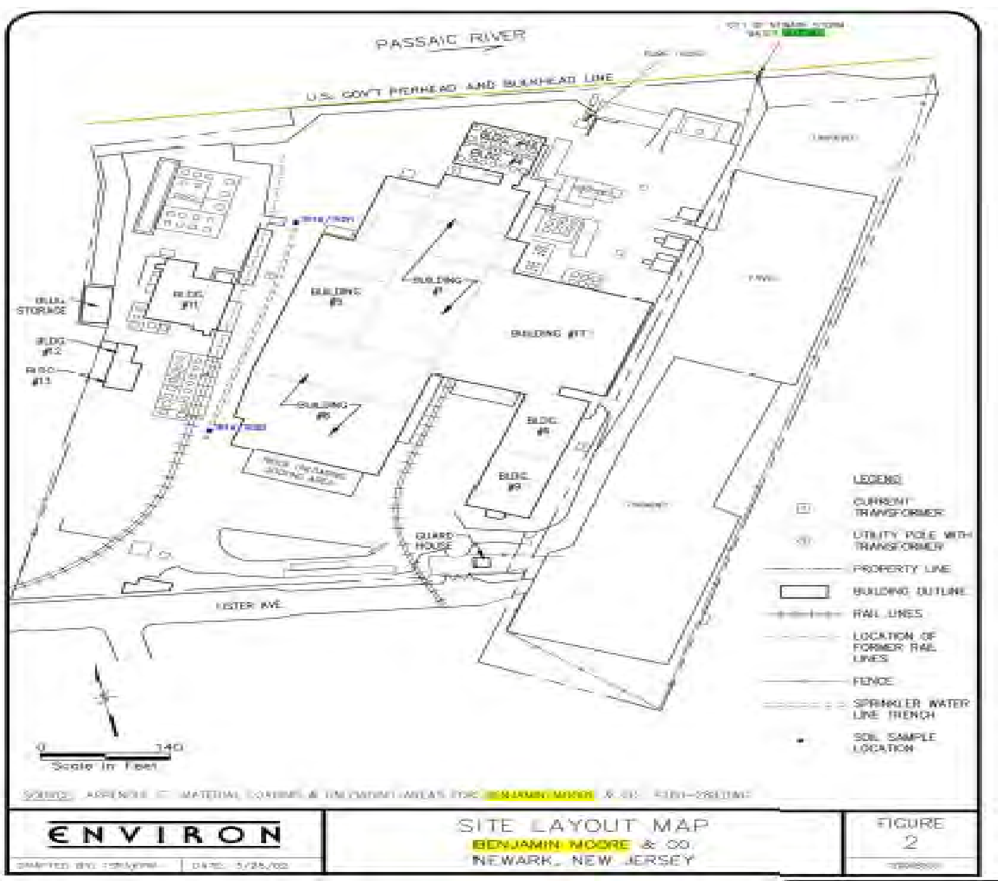
Ramboll submitted a Remedial Investigation Report/ Remedial Action Work Plan in 2007. The presence of Historic Fill identified in 2007 lead to a Remedial Action Workplan Addendum submitted in May 2008, which "proposed to contain-in-place PCB-impacted soils and site-wide historic fill soils with a deed restriction and engineering control (i.e., a cap.)." (PAP-00724497). A deed notice was recorded on November 17, 2017. The 2018 RAR was submitted in February 2018. Subsequently, Ramboll applied for a Remedial Action Permit for Soils on Benjamin Moore's behalf "to address contamination in soil, primarily due to the presence of historic fill" (PAP-00725058). The NJDEP established the permit on May 7, 2018. A CEA was also established on May 8, 2018. Benjamin Moore's LSRP issued a Remedial Action Outcome (RAO), signaling the remediation was complete, on June 25, 2018 (PAP-00725061).

Sewer

There is no information regarding sewer sampling in the available file material

Soil

Ramboll conducted investigations and remediation of two relevant AOCs:

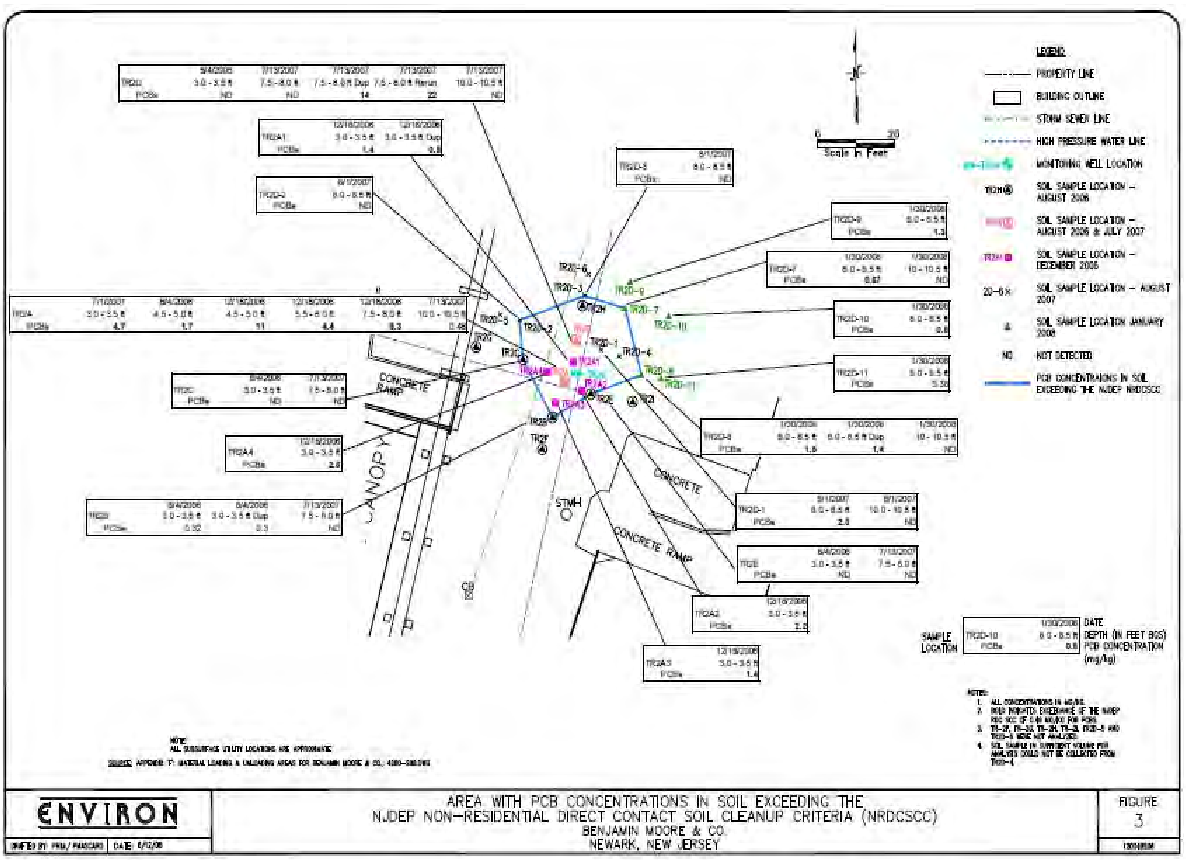


(PAP-00724586)

Further information on these investigations is provided below:

AOC -1: PCB Area

According to the Site Assessment, ENVIRON conducted an initial AOC-specific soil investigation and limited soil removal in the western portion of the BMC Plant in 2001 to address PCB impacts to soil (PAP-00725061). During this investigation, "Ramboll collected four soil samples (TR1A, TR1B, TR2A and TR2B) from each end of the sprinkler line trench. These samples were analyzed for PCBs . . . . PCBs were not detected in samples TR1A, TR1B or TR2B." (PAP-00724499). However, Aroclor-1242 was detected in one sample (TR2A at 4.7 mg/kg; 3-3.5 ft bgs) above the then-applicable Non-Residential cleanup standard. PCB-impacted soils in the location and vicinity of sample TR2A were removed and placed into two 55-gal drums, which were disposed off-site at CWM Chemical Waste Services, LLC landfill in Model City, NY (PAP-00724662; PAP-00725061).



PAP-00724662

The 2018 RAR notes that "Benjamin Moore received correspondences from the NJDEP, dated November 1, 2004 and June 19, 2007, requiring delineation of the PCB impacts identified in the vicinity of TR2A. Soil samples were collected in August 2006, with supplemental sampling in December 2006, July 2007, and August 2007. . . . The

delineation study concluded that the extent of PCB contamination extended to a maximum depth of approximately 10 ft bgs over a 510 square-foot area. The results of this delineation study suggested that given historic fill conditions in the region, coupled with only the sporadic occurrence of PCBs at low concentrations," the identified PCBs were attributed to historic fill (PAP-00724500). This position was approved by Benjamin Moore's LSRP and accepted by the NJDEP. "Benjamin Moore received approval for the [Remedial Investigation Report/Remedial Action Work Plan] and [Remedial Action Work Plan] Addendum in a February 14, 2012 correspondence from the NJDEP" (PAP-00724500). According to the 2018 RAR, "[t]he majority of the site is covered with asphalt pavement or concrete and is surrounded by a 100-year flood wall, preventing storm water from reaching the underlying contaminated soil or the Passaic River" (PAP-00724499-50). According to the Site Assessment,, "[g]iven the location of contamination in soils below an asphalt cap at the BMC Plant, within the 100-year flood wall, and not in proximity to a pathway to the River, it is not possible for the limited area of soil impact to migrate to the Passaic River" (PAP-00725062).

AOC-2: Pervasive Historic Fill

As described above, a fire-water sprinkler failure at the BMC Plant occurred in December 2007 south of Building 11, initiating an investigation that was consolidated with ENVIRON's then-ongoing investigation at the BMC Plant. Soil samples were collected and analyzed for Priority Pollutant VOCs with a 10-compound library search (VOC+10), Priority Pollutant Base Neutral SVOCs with a 15-compound library search (BN+15), Priority Pollutant metals (PP metals), Priority Pollutant pesticides (PP pest), Total Petroleum Hydrocarbons (TPHCs), and PCBs (PAP-00724500). Benzo(a)anthracene (0.93 mg/kg) and benzo(b)fluoranthene (1.1 mg/kg) concentrations exceeded the Residential Direct Contact (RDC) Soil Cleanup Criteria (SCC) and RDC Soil Remediation Standards (SRS). Benzo(a)pyrene exceeded the Non-Residential Direct Contact (NRDC) SCC and NRDCSRS concentration standards. Naphthalene was detected in concentrations greater than the RDCSRS and the NRDCSRS. Additionally, concentrations of lead (2,200 mg/kg) exceeded the RDCSRS, the RDCSCC, the NRDCSCC and the NRDCSRS (PAP-00724501).

According to the Site Assessment, with exception of antimony and chromium, the contaminants are within the range of Target Contaminant Concentrations in Typical Historic Fill Material (PAP-00724501). Although not a listed contaminant in the former Table 4-2, Ramboll stated ''[b]ased on the SVOC contaminant mix, this detection [of naphthalene] was likely due to historic fill'' (PAP-00724507). The LSRP of record agreed with this position in issuing a RAO for the historic fills and the NJDEP accepted this position by issuing a RAP for Soils (PAP-00725061). Thus, the metals and PAH compounds identified in the soil samples from Benjamin Moore are attributed to historic fill (PAP-00724501).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

BEROL CORPORATION

Facility Name, Address and Size: Berol Corporation, 41 Dickerson Street, Newark, NJ. The site is less than 2 acres (PAP-00103021); based on data from four years between 1975 and 1995, the facility had between 60 and 120 employees working 1 shift per day (PAP-00102592; PAP-00102612; PAP-00102656; PAP-00102695).

1. **Business Type:** Berol is the successor by merger to Faber-Castell Corporation ("Faber"), which operated a manufacturing facility at 41 Dickerson St, Newark, NJ between 1919 and 1996. In the early decades, Faber manufactured rubber bands and erasers at the facility. Over the years, Faber's manufacturing included other rubber and vinyl products, inks, and paint (PAS-00048587).

2. **Time Period of Ownership/Operations**

   Operator: 1919 to 1996 (PAS-0041518)
   Owner: 1919 to 1997 (PAP-00102725)

3. **Operational History/COC Use and Presence at the Facility**

   Faber-Castell Corporation (Faber) was engaged in rubber manufacturing and ink manufacturing (PAP-00102592). From approximately 1919 to 1954, Faber-Castell manufactured pencil erasers and rubber bands at the main building (i.e., Building 1) utilizing rubber materials (PAP-0034742-47; PAP-00103015). The manufacturing process at the Facility included the weighing and mixing of raw materials (i.e., rubber and plastisols), milling, curing, rolling to form sheets, extruding product shapes, vulcanizing, cooling, cutting to size, tumbling to smooth the edges and size, printing and packaging for sale (PAP-00103015). As of 1954, rubber bands were no longer manufactured. However, vinyl eraser products started to be manufactured around 1954 in addition to the rubber erasers, until at least 1995. Processing of vinyl products was identical to the rubber, except that the vinyl underwent a curing process of in-place vulcanizing (PAP-00103015). Between 1969 and 1989, the Facility manufactured water-based carbon drawing inks and India Ink, produced and sold under the name Higgins Inks (PAP-00103015).

   The raw materials used at the Facility included plastisols, di-octyl phthalate (DoP), natural and synthetic rubber (polyvinyl chloride), abrasives, rubber fillers (calcium carbonate, and carbon black), water dyes, dispersants and water proofing agents (PAP-00102612, 26); PAP-00102642; PAP-00102697).

   In a 1995 PVSC Sewer Connection Permit Application, the manufacturing activities are described as: "small production, specialty compounds on lab two roll mill" and "experimental compounds on two roll mills and vinyl mixer." The primary raw materials listed included: synthetic rubber, fillers, calcium carbonate, diatomaceous earth, and pumice, sulfur accelerators, activators-vinyl resin, fillers and plasticizers. The Facility's products and services include specialty rubber for plates; specialty gaskets; material evaluation, rubber and vinyl; experimental development compounds (PAP-00102658).

In addition, presented below is a list, identified as a "Hazardous Substance Inventory" in the March 1995 Preliminary Assessment Report for Faber-Castell Corporation (PAP-00103026-28).

MATERIAL NAME	ANNUAL USAGE	STORAGE METHOD	LOCATION	REMAIN ONSITE
Camel-Carb (calcium carbonate, e.g. limestone)	750,000 lbs	50 lb paper bags	Store Room, warehouse	Yes All
Factice & Carter Bell French White Products (vulcanized vegetable oil & calcium carbonate)	520,000 lbs	50 lb cardboard cartons	Store Room, warehouse	Yes All
PLIOVIC Resin & GEON (vinyl chloride resins)	150,000 lbs	50 lb paper bags	Store Room, warehouse	Yes All
Carbon Black	15 lbs	5 lb paper bags	Store Room, warehouse	Yes All
Byrates Barium Sulfate & Hi-Sil (contains silica)	12,000 lbs	50 lb paper bags	Store Room, warehouse	Yes All
Thiurd & Monothiurad (tetra methyl thiuram monosulphide)	550 lbs	25 lb paper bags	Store Room, warehouse	Yes All
Zinc Oxide	2,500 lbs	50 lb paper bags	Store Room, warehouse	Yes All
Sulfur	10,000 lbs	50 lb paper bags	Store Room, warehouse	Yes All
TEA - DLC- A (triethanolamine)	12,000 lbs	50 lb paper bags	Store Room, warehouse	Yes All
Stan-Mag Mini Beads (naphthenic distillate and magnesium oxide)	17,000 lbs	50 lb paper bags	Store Room, warehouse	Yes All

MATERIAL NAME	ANNUAL USAGE	STORAGE METHOD	LOCATION	REMAIN ONSITE
Santiguard Prevulcanization Inhibitor [N-(cyclohexylthio)-phthalimide]	2,900 lbs	50 lb paper bags	Store Room, warehouse	Yes All
Tellura Oil (naphthenic distillates)	71,000 lbs	AST	AST, former UST	Yes All
Palatinol - 711 (plastizer)	4,000 gal	2 ASTs	AST, former USTs	Yes All
Diethylene Glycol	135 lbs	55 gal drum	Boiler Room	Yes All
Akrosperse Green & Blue Pigments (copper compound)	3,000 lbs	10 lb paper bags	Store Room, warehouse	Yes All
Kerosene	10 gal	5 gal cans	Store Room, warehouse	No longer present
Higgins Ink	200,000	Mixing vats	2nd floor Bldg. 2	Yes All
Labeling inks	100 gal	5 gal can	packaging	Yes All
Fuel Oil	XX	USTs	former USTs	No longer present
Misc. grease and lubricating oils	150 gal	55 gal drums	Maintenance Dept.	Yes All
Waste Oil	50 gal	55 gal drum	Maintenance Dept.	Yes All
Acetone	50 gal	5 gal can	Store Room, warehouse	No longer present
Di-n-octyl-phthalate	175,000 gal	UST	former USTs	No longer presents

MATERIAL NAME	ANNUAL USAGE	STORAGE METHOD	LOCATION	REMAIN ONSITE
Naphtha	100 gal	UST	former UST	No longer present
Antimony	5,000 lbs	10 lb paper bags	Store Room, warehouse	No longer present
Asbestos	X	X	on pipes, etc.	Yes

4. Identified COCs

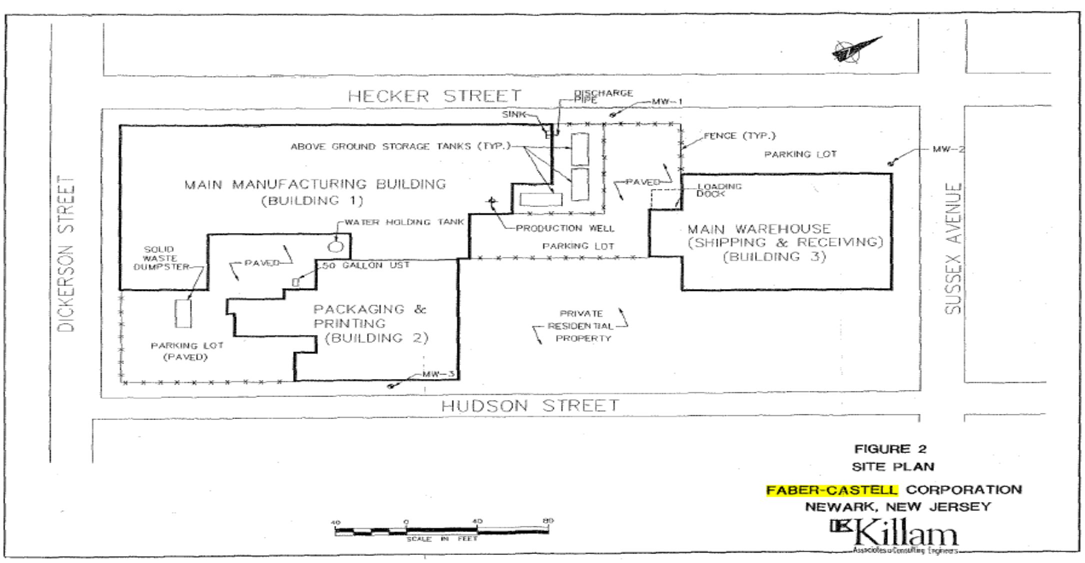
- PAHs (stored and used)
- Copper (stored and used)

PAHs

Certain materials used at the Facility contained petroleum hydrocarbons, which may have contained PAHs. Petroleum products, which may have contained PAHs, were used as fuel oil, lubricating oil, and in the rubber manufacturing process. They were stored in drums, USTs, and ASTs as described in the summary below (PAP-00103027-28):

- Product: Telura oil (napthenic distillates); Annual Usage: 71,000 lbs; Storage Method: AST, former UST;
- Product: Kerosene; Annual Usage: 10 gal; Storage Method: 5 gal cans;
- Product: Fuel Oil; Annual Usage: N/A; Storage Method: USTs (until removed);
- Product: Miscellaneous Grease and Lubricating Oils; Annual Usage: 150 gal; Storage Method: 55 gal drums;
- Product: Waste Oil; Annual Usage: 50 Gal; Storage Method: 55 gal drums;
- Product Name: Naptha; Annual Usage: 100 gal; Storage Method: UST (until removed);

According to the *PAR and RI Report*, dated March 1995, Killam Associates observed and documented the removal of the UST systems in approximately 1994 (PAP-00103043), when three ASTs were installed at the Faber site to replace the removal of the USTs (PAP-00103035). Each AST had a secondary containment structure, was located on concrete pads surrounded by asphalt pavement, and had above-ground piping (PAP-00103035). Presented below is a figure showing the location of these ASTs:



PAP-00103064

Three Areas of Environmental Concern (AECs) were identified at Faber in a Remedial Investigation conducted in 1995. These areas include: the former Naphtha UST previously located in the courtyard area between the Main Manufacturing Building and Packaging & Printing Building; stained areas on compromised asphalt in the courtyard area; and a sink drain pipe discharge (located at the northeast corner of the Main Manufacturing Building near the ASTs). Laboratory analytical results identified bis(2-ethylhexyl)phthalate in soil samples from borings SB-3 at >790 milligrams per kilogram (mg/kg) and SB-4 at >2600 mg/kg. Elevated soil levels of benzo(a)anthracene (20 mg/kg at SB-6), benzo(b)fluoranthene (34 mg/kg at SB-6), benzo(k)fluoranthene (7.5 mg/kg at SB-3), benzo(a)pyrene (16 mg/kg at SB-6), indeno(1,2,3-cd)pyrene (7.8 mg/kg at SB-4), and dibenzo(a,h)anthracene (6 mg/kg at SB-6) were also identified (PAP-00103053-58, 64-66).

Copper

As mentioned in Section 3, Operational History/COC Use and Presence at the Facility, Faber used Akrosperse Green and Blue Pigments, which contain a copper compound. According to the *Preliminary Assessment Report and Remedial Investigation Report for Faber-Castell Corporation, ISRA Case No. 94569* prepared by Killam Associates dated March 1995 (PAR and RI Report), Faber used 3,000 lbs of Akrosperse Green and Blue Pigments annually. The pigments were stored in 10-lb bags in the Store Room in the Warehouse (PAP-00103027). There is no information regarding copper releases in the available file material.

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

The New Jersey Department of Environmental Protection (NJDEP) has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the United States Environmental Protection Agency (EPA) Target Compound List (TCL) for PAHs and Target Analyte List (TAL) for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PAHs detected at the site in soils are presented in the table below.

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Benzo(a)anthracene	20 mg/kg
Benzo(a)pyrene	16 mg/kg
Benzo(b)fluoranthene	34 mg/kg
Benzo(k)fluoranthene	7.5 mg/kg
Dibenzo(a,h)anthracene	6 mg/kg
Indeno(1,2,3-cd)pyrene	7.8 mg/kg

5. COC Pathways

Sanitary Sewer

According to the *PAR and RI Report* dated March, 1995, sanitary discharges from each of the three buildings was directed to the municipal sanitary sewer system, which discharged to the Passaic Valley Sewerage Commission (PVSC) interceptor (PAP-00103015). Presented below is a figure showing the location of the main sanitary line and the sanitary system piping (PAP-00103031). The stormwater at the facility was collected in stormwater drains located in the courtyard and then discharged to the combined municipal sanitary sewer system (PAP-00103031, PAP-00103035).

Industrial discharges only occurred from Building 1 and Building 2 and were also directed to the municipal sanitary system (by permits discussed in Section 6). The industrial discharges were comprised of steam condensation, boiler blow down and contact and non-contact cooling water. Other than sanitary waste, no solids were discharged with the industrial waste. Industrial waste collection sumps were located in each building and were monitored and reported on a monthly basis to the sewerage authority (PAP-00103015). The discharge limitations listed in the Facility's 1995 Draft PVSC Sewer Connection Permit included monthly monitoring requirements for biological oxygen demand, total suspended solids, and wastewater volume (PAP-00102676). There were no known discharge limitations or permit violations related to any PAHs. The 1995 Draft PVSC Sewer Connection Permit also included monitoring requirements for metals, at local limits for users in the area for copper, lead and mercury, at Outlet No. 20407462-41900-0201 and Outlet No. 20407463-41900-0201 (PAP-00102679-80).

The majority of raw materials and the finished product at this facility were in solid form. Waste from the processes were placed in various containers (fiber drums, plastic totes, etc.). The solid waste was then either recycled back into the process or discarded as a

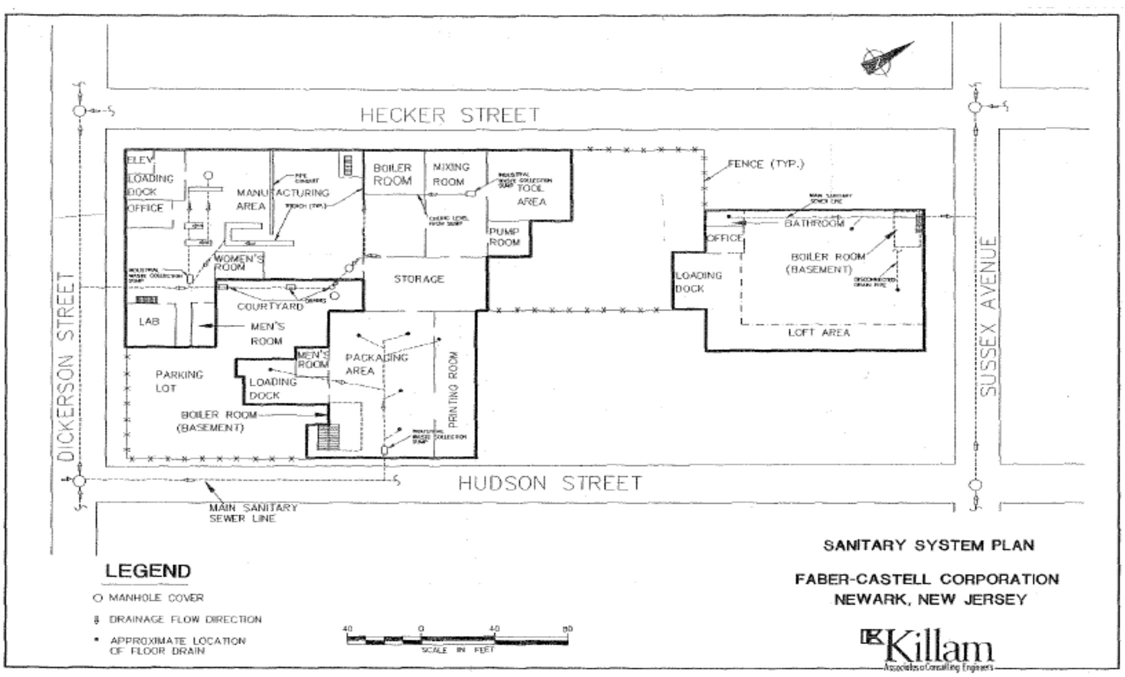
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

solid, nonhazardous waste. A roll-off waste container for the solid waste was maintained in the parking area between buildings 1 and 2. The container was emptied by Sisborro Disposal, Inc. and monitored by the Essex County Utility Authority (PAP-00103016). A letter from Killam Associates stated that over 150 tons of waste was generated during the 1995 operating year under waste manifest number NJA2260178. According to the IC form submitted to NJDEP "waste resulted from Soil Cleanup – Not from normal operations (PAP-00455499). Separately, Uniform Hazardous Waste Manifests from March 21, 1997, after manufacturing operations at the Facility ceased indicated that 11 pounds of "Waste Mercury: Compound Solid N.O.S 6.1 UN2025 PKG: II and 21 pounds of "Waste Mercury 8 UN280 PKG: II were transported offsite (PAP-00445934-35).

There are no direct outfalls from the Facility to the Passaic River. Prior to 1924 (i.e., between 1919 and 1924), the Facility is believed to have discharged to the public sewer system, which in turn discharged to the Passaic River at Clay Street (PAP-00348975; PAP-00349305, 12; PAP-00349764-65).

After the construction of the PVSC interceptor in 1924, the street sewers on Sussex Avenue, Dickerson Street and Hudson Street discharged to the PVSC interceptor at Clay Street (PAP-00349762; PAP-00349853). The PVSC interceptor discharged to the PVSC treatment plant (PAP-00349628). The Clay Street CSO chamber opened during certain wet weather conditions to allow excess combined sewer flow to overflow to the Passaic at the Lower Passaic River Study Area ("LPRSA") (PAP-00349628).

Based on an October 1995 PVSC Sewer Connection Permit Application, the annual wastewater discharge into the City of Newark combined sewer system was 7,537,216 gallons, of which 1,540,000 was sanitary wastewater (PAP-00102657).



(PAP-00193031)

6. Regulatory History/Enforcement Actions

Permits

In 1980, Berol submitted a PVSC Sewer Connection Application, which was titled a "Renewal Application" (PAP-00102612). PVSC Sewer Connection Applications were also submitted in 1985 (PAP-00102640) and 1990 (PAP-00425704). The facility applied for Sewer Connection Permit No. 20402123 in 1985, which was later superseded (PAP-00102640). The facility was issued PVSC Sewer Connection Permits for Permit No. 20402123 in 1981 and 1991 (PAP-00425689, PAP-00425724). In 1995, a sewer connection permit application was submitted and the Facility was assigned Sewer Connection Permit No. 20407463 (PAP-00102674). A PVSC Sewer Connection Permit was issued on November 9, 1995 with an expiration date of November 9, 2000 (PAP-00102674; PAP-00425739). The permit specified one domestic wastewater outlet and two industrial wastewater discharge outlets, which are summarized below (PAP-00102676-80):

- Outlet No. 20407461-41900-0201, domestic outlet (Sussex Avenue)
- Outlet No. 20407462-41900-0201, industrial wastewater outlet located in a pit in the rubber manufacturing area on the first floor of Building No. 1 (Dickerson Street)
- Outlet No. 20407463-41900-0201, industrial wastewater outlet located in a pit in the packaging area on the first floor of Building No. 2 (Hudson Street)

The discharge limitations listed in the Facility's discharge permit included monthly monitoring requirements for biological oxygen demand, total suspended solids, and wastewater volume (PAP-00102676). There were no known discharge limitations or permit violations related to any PAHs noted in the available references. The 1995 PVSC Sewer Connection Permit also included monitoring requirements for metals at local limits for users in the area, including copper, lead and mercury, at Outlet No. 20407462-41900-0201 and Outlet No. 20407463-41900-0201 (PAP-00425744,45). The monthly average discharge limitations and threshold value for Outlets 20407462-41900-0201 and 20407463-41900-0201 are presented below in a tabular format:

Outlet No. 20407462-41900-0201 and Outlet No. 20407463-41900-0201

PVSC Local Limits	Discharge Limitations		Monitoring Requirements		
Parameter	Monthly Average(mg/l)	Threshold Value (mg/l)	Measurement Frequency	Sample Type	Reporting Period
Copper	3.02	0.092	Monthly	24 hr. comp	Monthly
Lead	0.54	0.029	Monthly	24 hr. comp	Monthly
Mercury	0.080	0.001	Monthly	24 hr. comp	Monthly

(PAP-00102679-80)

Violations

No violations were identified in the available file material.

7. Response Actions

Characterization Activities

The following is a list of major response action documents identified in the available file material:

- Killam Associates (Killam). *Discharge Investigation and Corrective Action Report*. NJDEPE Case Number 91-11-18-1142-12. June 1992, PAP-00102964;
- Killam Associates (Killam). *Preliminary Assessment Report and Remedial Investigation Report for Faber-Castell Corporation, ISRA Case No. 94569.* March 1995, PAP-00103011;
- Killam Associates (Killam). *Remedial Investigation Report, Remedial Action Report and Industrial Site Recovery Act Report for Faber-Castell Corporation, ISRA Case No. 94569.* May 1996, PAP-00103083;
- Killam Associates (Killam). *Addendum to the Remedial Investigation Report, Remedial Action Report and Industrial Site Recovery Act Report for Faber-Castell Corporation, ISRA Case No. 94569.* May 1996a, PAP-00103260

Remediation Activities

Sewer

No sewer sampling data was identified in the available file material.

Soil

Killam's Preliminary Assessment identified potential AECs that were addressed at the Facility (PAP-00103035-36). The AECs were assessed to determine the integrity of the structures involved and visual indicators of potential contamination (i.e., discoloration and/or staining) and where contamination was suspected to be present soil samples were collected and analyzed for petroleum hydrocarbons, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), including PAHs. When soil concentrations of petroleum hydrocarbon-related contaminants, including PAHs were above the New Jersey Department of Environmental Protection (NJDEP) Soil Cleanup Criteria (SCC), the impacted soils were excavated and disposed. The field evaluation, soil sampling and remediation activities are summarized below:

Naptha UST in the courtyard area: Approximately 30 tons of soil was excavated from the Naphtha UST area. The tank size was believed to be between 30 and 55 gallons. The tank was removed in February 1995, but it had not been used since the 1970s. The UST was located in the courtyard adjacent to Building 2 (PAP-00103032; PAP-00103093).

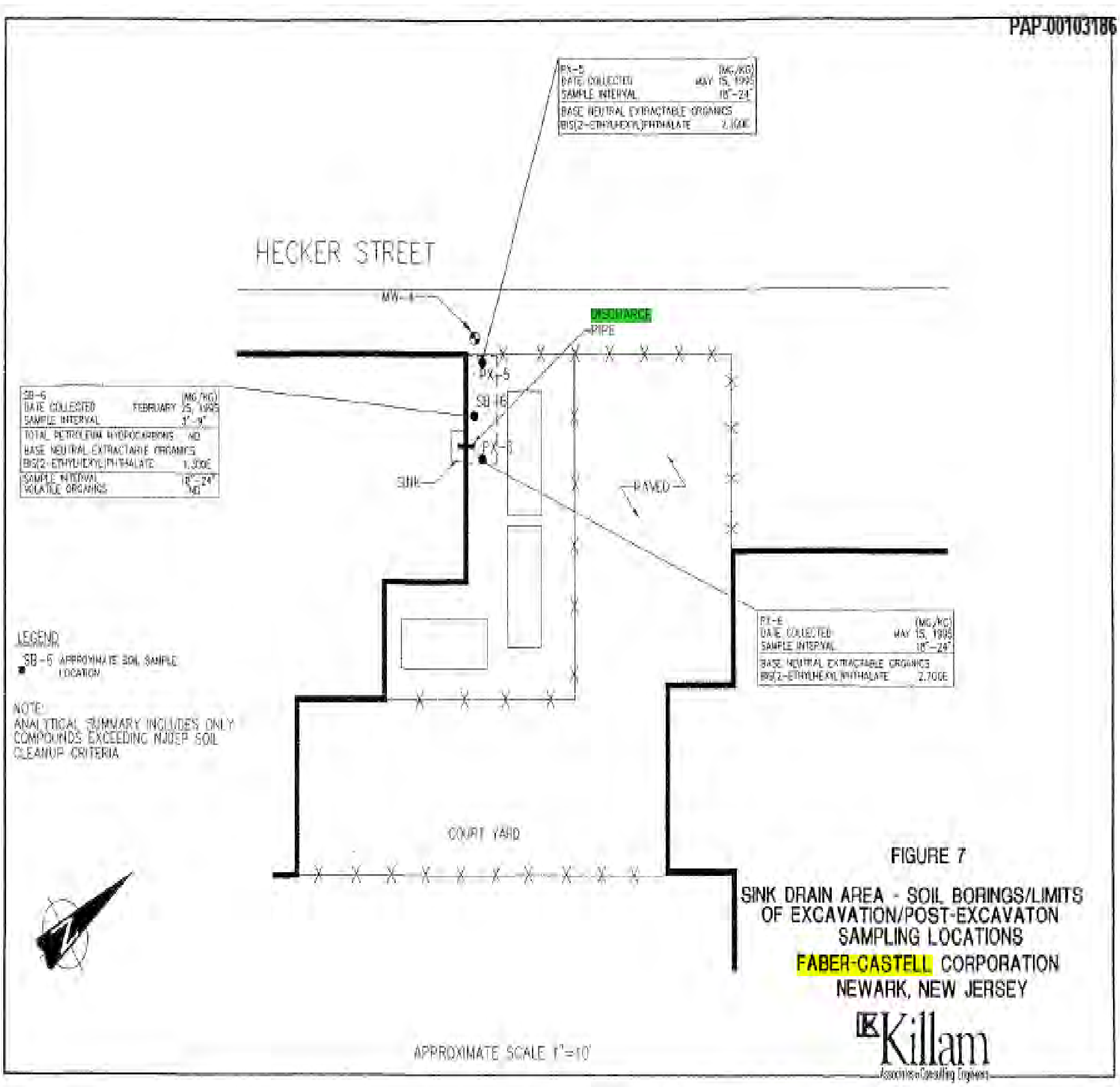
Stained areas on asphalt/concrete of compromised integrity in the courtyard area: On February 10, 1995, Killam obtained samples from the courtyard area by installing test pits (PAP-00103094). The laboratory analytical results identified elevated concentrations of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene. Approximately 130 tons of soil were excavated from the courtyard area to a depth of 18 inches below grade. In 1995, additional excavation of the courtyard area to a depth of 36 inches below grade took place; approximately 97 tons of soil from the courtyard area was removed. After the 1995 excavation, sampling showed no compounds exceeding the NJDEP Soil Cleanup Criteria (SCC) (PAP-00103095–96).

Killam obtained soil samples from the sink drain pipe discharge from February 1995 to March 1996 (PAP-00103187). Available references did not state the timeframe in which this unit operated. Elevated concentrations of several base-neutral compounds above NJDEP SCC were noted, including: benzo(a) anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd) pyrene and dibenzo(a,h)anthracene (PAP-00103096). The PAH concentrations detected in soil samples collected from the sink drain pipe area are presented below in a tabular format (PAP-00103187):

Sample Identification	SB-6	PX-5	PX-6	SS-5	SS-6	SW-3	SS-1
Constituents (mg/kg)							
Benzo(a)anthracene	20	ND	ND	0.17	ND	ND	--
Benzo(a)pyrene	16	ND	ND	0.19	ND	ND	--
Benzo(b)fluoranthene	34	ND	ND	ND	ND	ND	--
Benzo(k)fluoranthene	ND	ND	0.009	0.34	ND	ND	--
Dibenz(a,h)anthracene	6	ND	ND	ND	ND	ND	--
Naphthalene	13	ND	ND	ND	ND	ND	--
Fluoranthene	67E	ND	ND	0.33	ND	ND	--
Indeno(1,2,3-cd)pyrene	4.4	ND	ND	ND	ND	ND	--

ND – Non-detect; E – Estimated Value; -- indicates that samples was not analyzed for this compound

Presented below is a figure of the Sink Drain Area – Soil Borings/Limits of Excavation/Post-Excavation Sampling Locations (PAP-00103186).



In March 1995, approximately 1.5 tons of soil was excavated from this area to a depth of 18 inches below grade. In July 1995, additional excavation of the area was conducted to a depth of 36 inches below grade; approximately two tons of soil was removed (PAP-00103096-97). One post-excavation soil sample was collected of the side wall opposite the discharge point and was submitted for analysis. On March 11, 1996, Killam installed a soil boring (SS-1) adjacent to the excavation to delineate the contamination. Based on the data presented on the table above (PAP-00103187), it appears that only bis(2-ethylhexyl)phthalate was detected at a concentration of 0.130 mg/kg, which was below the NJDEP Soil Cleanup Criteria (SCC) of 49 mg/kg (PAP-00103187). It appears that this sample was only submitted for analysis of bis(2-ethylhexyl)phthalate as this was the only compound detected above NJDEP SCC in SW-3. As such, the noted contamination has been delineated to be in a small area.

8. Summary of Asserted Defenses

Some or all of Berol Corporation's releases of hazardous substances to the Lower Passaic River, if any, were "federally permitted releases" within CERCLA Section 107(j), 42 U.S.C. § 9607(j), and resulting response costs or damages, if any, may not be recovered under CERCLA.

Pursuant to CERCLA Section 107(b), 42 U.S.C. § 9607(b), Berol Corporation is not liable for the releases or threatened releases of hazardous substances from the Facility, if any, because such releases or threatened releases were caused solely by: an act of God; an act of war; or the acts or omissions of persons or entities other than Berol Corporation, for whom Berol Corporation is not responsible.

Berol Corporation is not a successor to any person or entity that owned or operated any portion of the Facility property other than Faber-Castell Corporation (f/k/a A.W. Faber-Castell Pencil Company, f/k/a A.W. Faber, Inc.). Specifically, Berol Corporation is not a successor to any person or entity that owned or operated any portion of the Facility property either before or after Faber-Castell Corporation's ownership and operation of that portion of the Facility property.

Diamond Alkali OU2 Allocation

ADR Confidential

Facility Data Report

CAMPBELL FOUNDRY COMPANY

Facility Name, Address and Size: Campbell Foundry Company (CFC)**,** 800 Bergen Street, Harrison, NJ 07029 (PAS-00012484); 2.6 acres (PAP-00070190). As of 1993, 110 employees worked at the facility (PAS-00012487). The available references did not include information on the typical work shifts.

1. **Business Type:** The CFC facility (facility) manufactured grey cast iron manhole covers, storm drain and sewer gratings, as well as other cast iron products for private and municipal use (PAS-00012487).

2. **Time Period of Ownership/Operations**

   Operator: 1927 to Present
   Owner: 1927 to Present

   CFC has owned portions of the site since 1927 (PAP-00070200-01).

3. **Operational History/COC Use and Presence at the Facility**

   CFC operated as an iron foundry from 1927 through 2003. From 2003 until present, the site has been used for storage, office operations, and finishing work for foundry products manufactured elsewhere (PAP-00070201).

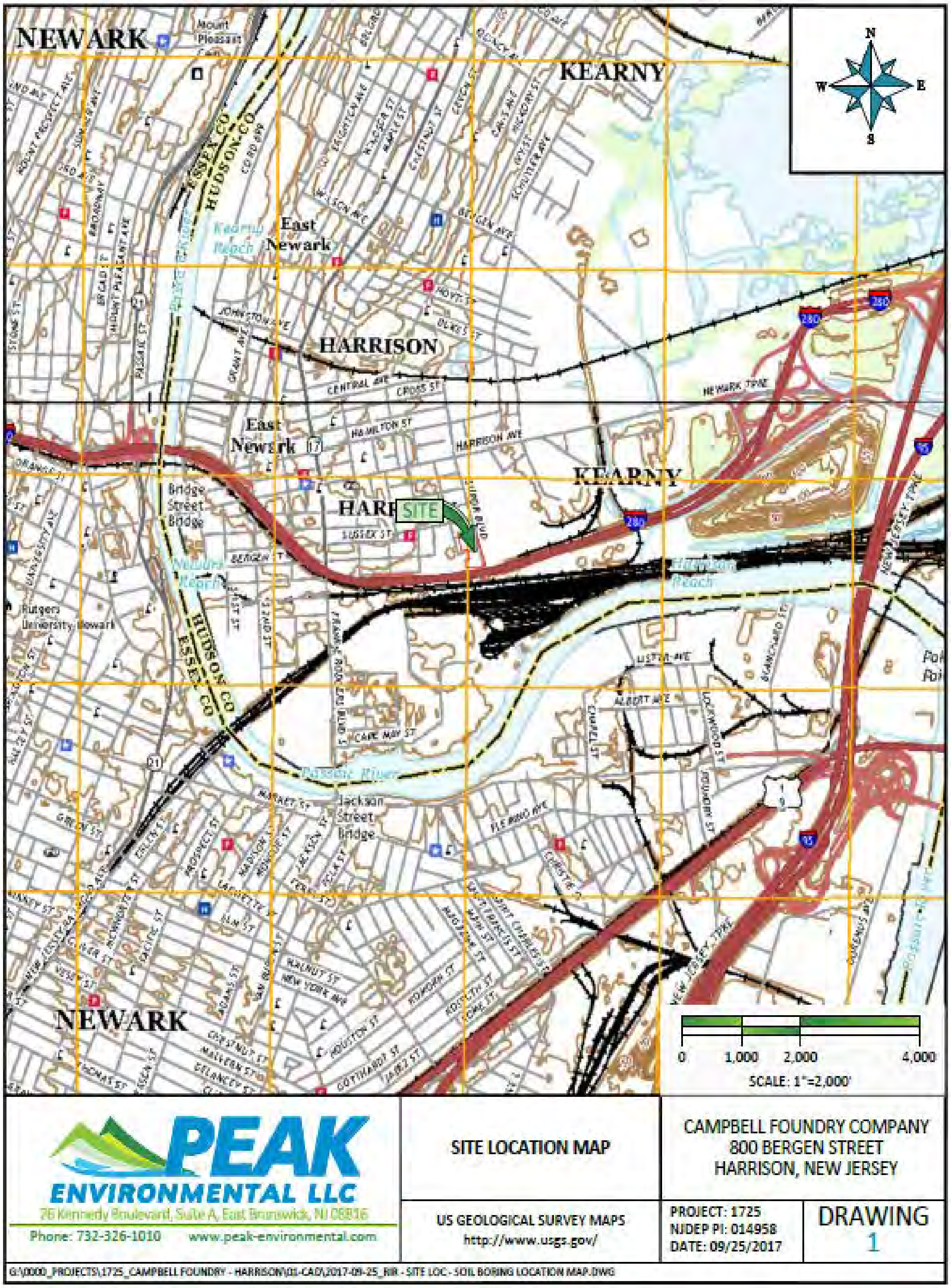
   Until 2003, the facility manufactured grey cast iron manhole covers, sewer gratings and other cast iron products by melting scrap iron. Examples of the scrap iron utilized for this purpose are engine blocks, broken machinery and old household radiators. Feedstock material was stored in a pile on the southeastern portion of the site (PAP-00073042).

   The facility was divided into three areas including two areas for the molding and casting operation and one for milling and maintenance. Large kettles of molten iron were transported between the two molding areas via a derrick-type crane. Scrap iron was melted in a large furnace and molten iron was poured into wooden, aluminum and sand-filled molds and cooled. Once poured, the castings were allowed to cool, were shaken out to remove the foundry sand, and then were separated for reuse or disposal. Final cast iron products were machined and drilled onsite. The pieces were painted by being dipped into two open tanks, one for primer and one for final paint. The tanks were phased out of the production process in approximately 1989 due to more stringent air emissions standards. Finished pieces were stored offsite at a stockyard in Kearny (PAP-00073042).

Diamond Alkali OU2 Allocation

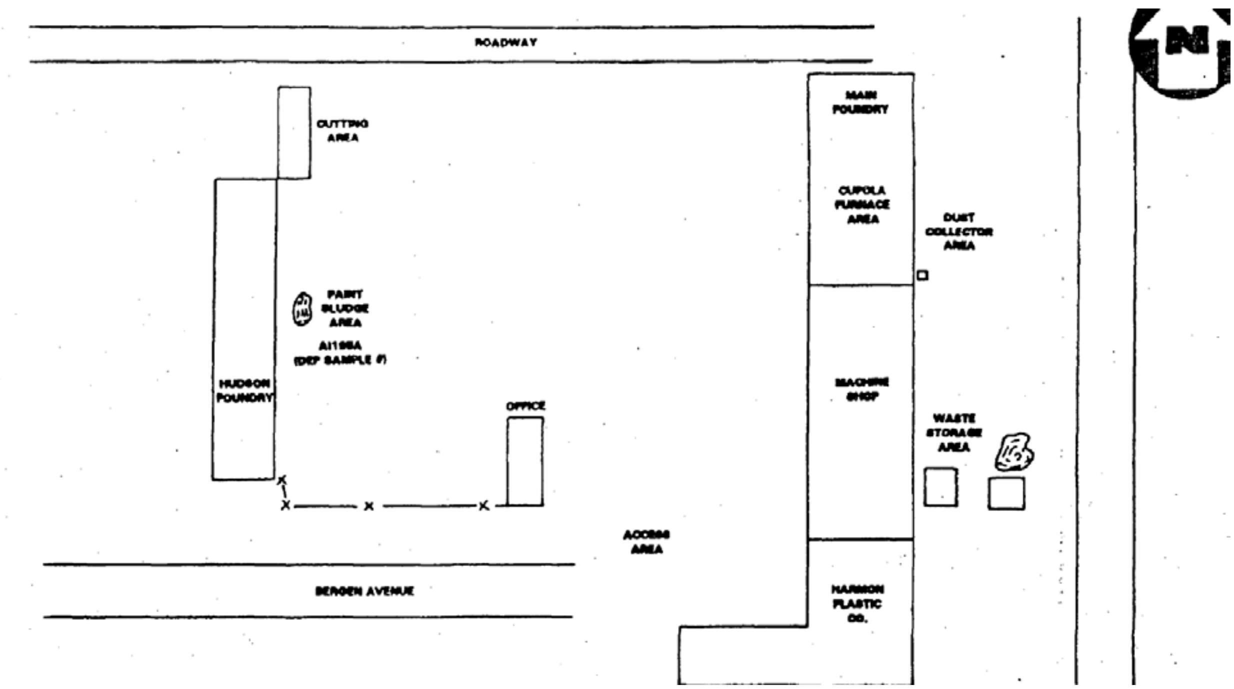
ADR Confidential

Facility Data Report



(PAP-00073060)

Metallic cupola dust was collected in 100-pound bags from air pollution devices during smelting operations. The locations of these devices were not specified in the available references. However, a Dust Collector Area is identified on a site layout plan as being located outdoors to the east of the Cupola Furnace Area. The dust contained lead, cadmium, and chromium and was, therefore, considered hazardous waste. Until 1992, the dust was bagged daily and shipped offsite to a fill site located in Kearny, New Jersey or Republic Environmental Systems, a licensed disposal facility, in Hatfield, Pennsylvania. Approximately 7,500 pounds per week of metallic cupola dust was generated by former operations. As of 1992, a screw conveyor was installed to transport the bag house dust from the hoppers to the 30-cubic-yard covered roll-off container, which was then disposed of (when full) at a licensed disposal facility (PAP-00070191; PAS-00012555, PAS-00012519).



(PAS-00012519)

A 1981 RCRA Generator Inspection form notes that the only hazardous waste onsite was waste cupola dust, and CFC was transporting this waste to a fill site it owned in Kearny, New Jersey (PAS-00012552; PAS-00012555). A June 1982 follow-up Hazardous Waste Investigation notes that at this time CFC was disposing of the cupola dust at a treatment storage and disposal facility (TSDF) in Honeybrook, Pennsylvania. The bags being used for the storage of the dust were noted to be 4 ply and strong enough to hold the cupola dust without spillage (PAS-00012563). However, an August 1983 inspection form notes that in the storage area, two bags were split open and dust had spilled on the soil. The storage area appears to have been located outdoors to the east of the Machine Shop and Cupola Furnace Area (PAS-00012567; PAS-00012570, PAS-00012519). A September 1983 Report of Phone Call noted that the spilled dust was cleaned up (PAS-00012578).

According to a 1992 *Final Draft Environmental Priority Initiative Preliminary Assessment Report*, there had been minor spills of paint sludge, lubricating oil, and metallic cupola dust, but these spills were immediately cleaned by CFC personnel and, therefore, there was no potential for these contaminants to enter groundwater (PAP-00072081; PAP-00072085).

4. Identified COCs

- PCBs (detected)
- PAHs (generated, detected)
- Copper (stored and detected)
- Lead (generated, stored, potentially released, and detected)
- Mercury (detected)

PCBs

PCBs were detected and delineated in a small, discolored gravel area at the southern end of the facility, which is opposite from the storm sewer drains present at the northern end of the facility. Based on review of available reports it appears that the source of PCBs was a minor discharge of hydraulic oil from onsite equipment, which did not migrate to or impact the sewer (PAP-00073048-50, 52-54; PAP-00073437-40). The maximum concentration of total PCBs (2.35 mg/kg) was detected in a soil sample collected from AOC E2 (PAP-00073471).

PAHs

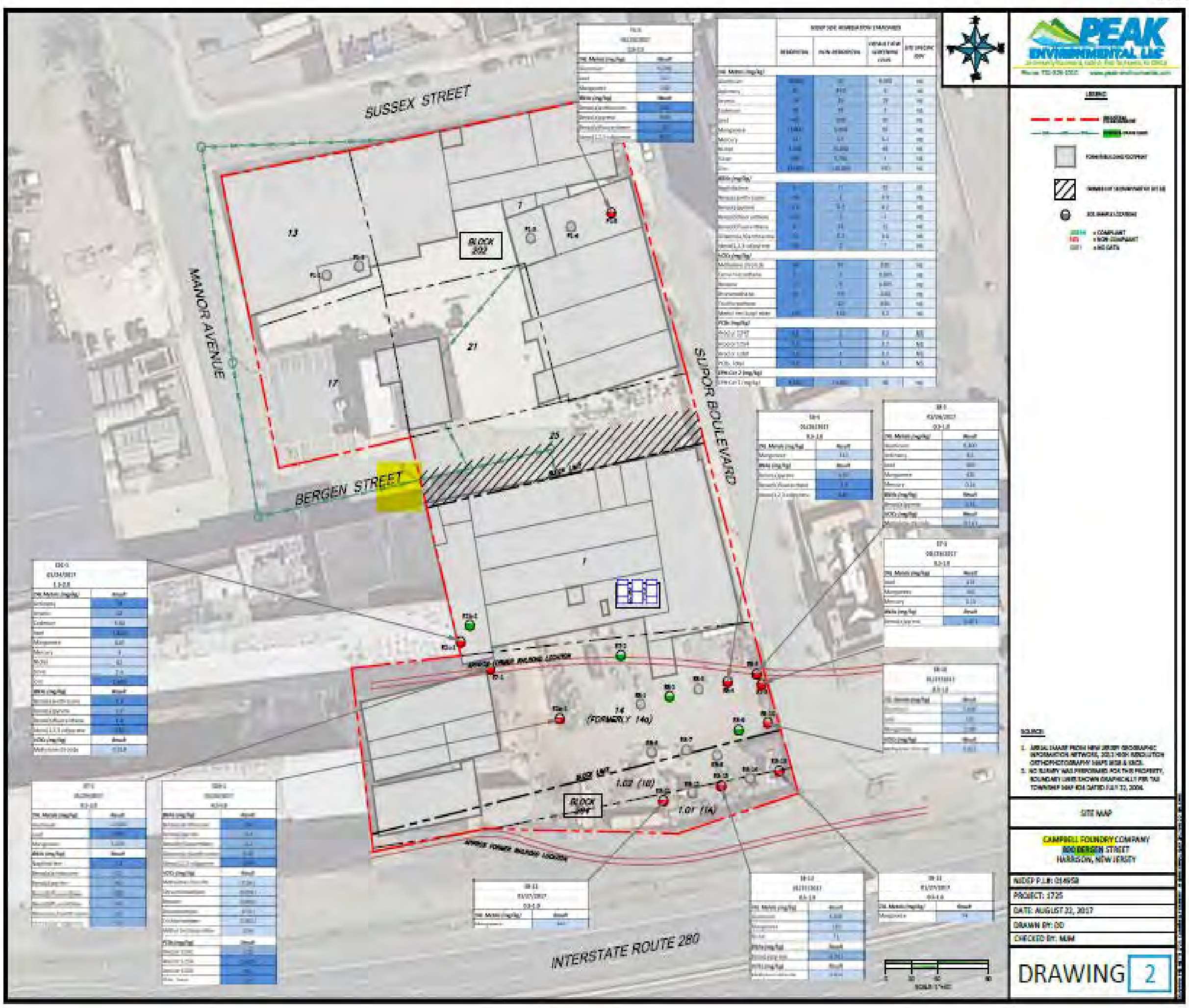
PAHs (as part of cupola dust) were byproducts of the manufacturing processes. While, fuel storage tanks were located at the facility and used in foundry operations, a site inspection conducted by Peak Environmental LLC on July 10, 2014 noted no discharges from these tanks and therefore no further action was needed (PAP-00070214-15). Both low and high molecular weight PAHs were detected in soil samples collected at the facility during a January 2017 sampling event at the following concentrations (PAP-00073557):

PAH Concentrations			
Constituents E	**Maximum Detected**	**AOC**	**Sample ID**
Benzo(a)anthracene	62 mg/kg	AOC E7	E7-1
Benzo(a)pyrene	86 mg/kg	AOC E7	E7-1
Benzo(b)fluoranthene	100 mg/kg	AOC E7	E7-1
Benzo(k)fluoranthene	34 mg/kg	AOC E7	E7-1
Dibenz(a,h)anthracene	15 mg/kg	AOC E7	E7-1
Indeno(1,2,3-cd)pyrene	60 mg/kg	AOC E7	E7-1

The above figure (PAP-00073486) presents the locations of these AOCs.

Copper

Along with lead, copper was also stored as part of scrap metal used to make cast iron manhole covers at the southeastern portion of the facility. Based on review of analytical data, copper was detected at a maximum concentration of 380 mg/kg from AOC E2 (Discolored Areas) sample (E2C-1) located in the southwest of the facility collected at a depth of 1.5-2.0 feet below grade surface (bgs) on January 24, 2017(PAP-00073468). Copper was also detected in soils collected from other AOCs (AOC E7 (Former Rail Lines), AOC E8 (Former Scrap Metal Storage Area), and AOC F1 (Former Foundry Operations) at concentrations between 18 mg/kg from AOC E8, sample EB-15 to 270 mg/kg from AOC E8, sample EB-13 (PAP-00073468). The figure below (PAP-00073486) presents the locations of these AOCs. It should be noted that the detections of copper are not presented on the figure below because the concentrations were below the NJDEP residential direct contact soil remediation standards.



(PAP-00073486)

Lead

Lead was stored at the southeastern portion of the facility as part of scrap metal that was used to make cast iron manhole covers (PAP-00073442-45). In addition, lead (as part of cupola dust) was a byproduct of the manufacturing processes (PAP-00070209).

As mentioned in Section 3, Operational History/COC Use and Presence at the Facility, in 1983, bag house dust collected from the cupola furnace spilled onto the ground. In response to this spill incident, soil in the bag house spill area was initially sampled in 1997 for metal analysis and lead was detected at a concentration of 696 milligrams per kilogram (mg/kg). This concentration was above the New Jersey Department of Environmental Protection (NJDEP) Soil Cleanup Criteria applicable at that time (PAP-00070210). Additional soil samples were collected in 1997, delineating the impacted soils. An asphalt engineering control was installed to cap the impacted soils and on September 29, 2005, the NJDEP issued a restricted-use no further action (NFA) letter for this area of concern (AOC) formerly identified as AOC 4. The concentration of lead in the deed-restricted area ranged from 6.1 to 5,850 mg/kg (PAP-00070210).

Mercury

Based on review of available reports, it appears that mercury was not used at the facility. However, mercury was detected in soil at a maximum concentration of 3 mg/kg collected from AOC E2 (Discolored Areas), sample E2C-1 located in the southwest of the facility at a depth of 1.5-2.0 feet bgs on January 24, 2017 (PAP-00073468). Mercury was also detected in soils collected from other AOCs (AOC E7 (Former Rail Lines), AOC E8 (Former Scrap Metal Storage Area), and AOC F1 (Former Foundry Operations) at concentrations between 0.02J mg/kg from AOC E8, sample EB-11 to 0.24 mg/kg from AOC E8, sample EB-5 (PAP-00073468). The above figure (PAP-00073486) presents the locations of these AOCs. These concentrations were below the NJDEP Soil Cleanup Criteria applicable at that time.

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

The NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the United States Environmental Protection Agency (EPA) Target Compound List (TCL) for PAHs and Target Analyte List (TAL) for

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[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

According to the *Remedial Investigation Report for Campbell Foundry Company*, prepared by Peak Environmental LLC, dated September 2017, Peak identified site-wide Historic Fill as an additional AOC. The Historical Information Review, which was conducted during the site investigation phase of the project, stated that since 1947 the site has been developed with structures on the property. In addition, marshlands were present to the south. It was also noted that the topographic gradient changed slightly from 1947 to 1958. During this same period, a structure was built on the western portion of the site. It appears that these changes are indicative of fill being brought onsite for redevelopment purposes (PAP-00073054). Soil borings conducted by Peak Environmental during site investigation revealed the presence of historic fill materials throughout the site, generally extending to a depth of 4.5 to 5 feet below ground surface. Metals and semi-volatile organics which are typical fill related contaminants, were detected within the historic fill materials at concentrations that exceed the Default Impact to Groundwater Soil Screening Level (DIGWSSL), and in some cases the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) and Non-Residential Direct Contact Soil Remediation Standards (NRDCRS) (PAP-00073050; PAP-00073054).

The levels of PAHs, copper, lead and mercury detected at the site is soils are presented in the table below (PAP-00073049).

COCs found in Historic Fill	
COC	**Max Detected Concentration**
Lead	2,800 mg/kg
Mercury	3 mg/kg
Benzo(a)anthracene	62 mg/kg
Benzo(a)pyrene	86 mg/kg
Benzo(b)fluoranthene	100 mg/kg
Benzo(k)fluoranthene	34 mg/kg
Dibenzo(a,h)anthracene	15 mg/kg
Indeno(1,2,3-cd)pyrene	60 mg/kg

[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

5. COC Pathways

According to the *Preliminary Assessment Report*, dated May 2015, John Campbell had stated that sanitary waste generated at the former industrial buildings and existing office building has always discharged to the public sewer system (PAP-00070209).

Storm sewer drains are present on the northern portion of the site in the concrete and asphalt paved areas (see map below). The drains discharge to the city sewer system. According to the 2015 Preliminary Assessment Report, there is no evidence of hazardous materials or petroleum products being discharged to the storm sewers; COCs were detected on-site in the southeastern portion of the property while the storm sewers were located on the northern portion of the site (PAP-00070216). In addition, the facility is located in an industrial area and the nearest surface water body (i.e., Passaic River) is located approximately 2,000 feet southeast of the site (PAP-00071995; PAS-00012486).

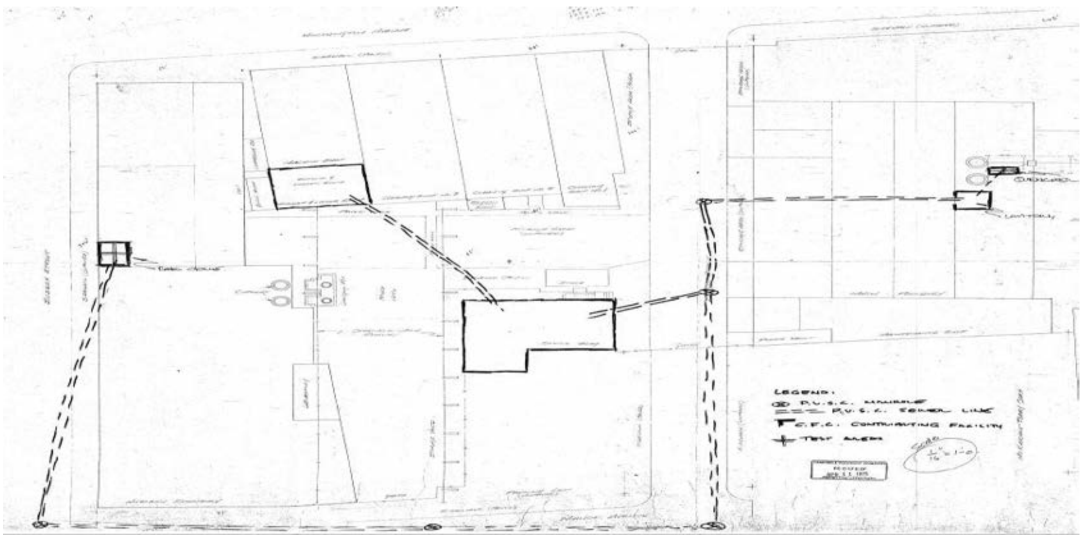
The 1975 NPDES Permit for the PVSC included the combined sewer outfall located at Worthington Avenue in Harrison, New Jersey as one of the “permitted” discharge point to the Passaic River. The CFC Bergen Street site is located in the Worthington Avenue combined sewer overflow (CSO) district (PAS-00012495).

The overflow for the Worthington Avenue CSO District, which the Campbell Foundry is located within, leads to an “open ditch leading to the Passaic River.” Both the district outlet sewer and the outfall sewer to the river are 24-inch diameter vitrified tile pipe sewers. PVSC reports the following related to overflow and regulator operation: “Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.” (PAS-00012496-97).

PVSC documentation states that the facility was first added by PVSC to its annually compiled inventory of “industrial users” in 1985/1986 (PAS-00108551, PAS-00108554). However, the Bergen Street site was reported by PVSC to have a “zero discharge” in the 1987/1988 industrial user inventory (PAS-00108627). In the 1986/1987 compilation, PVSC reported that the CFC Bergen Street site in Harrison discharged an average daily flow to the PVSC system of 0.015 MGD (million gallons per day). The Campbell Foundry facility was categorized by PVSC at that time as being a “foundry” (PAS- 00012497; PAS-00108465).

PVSC reported that Campbell Foundry was not in compliance with federally established pretreatment standards for companies categorized as being in the “metal molding and casting” industry, specifically 40 CFR § 464.35 Sub-Part C, which concern discharges of pollutants generated by “dust collection scrubber operations” associated with a metal molding and casting source. Those specific federal standards serve to establish limits on the discharge to a publicly owned treatment works (POTW) of copper and lead, along with other contaminants. The 1986/1987 PVSC report did not state which of the above-listed pollutants or combination of pollutants were not in compliance by Campbell Foundry in its PVSC discharge permit limits; it simply states that the site was not in

compliance. According to the report, Campbell Foundry was "projected" to be in compliance as of September 15, 1987 (PAS-00012497; PAS-00108531). The 1987/1988 PVSC report includes Campbell Foundry in a table titled "Companies with Zero Discharge" which is included in Form AR-4A (PAS-00108627). Per Section V of the 1987/1988 PVSC report: "Form AR-4A contains a list of categorical users who would be covered but are not because they have zero discharge" (PAS-00108618). Campbell Foundry was not included in Appendix A of the 1987/1988 PVSC report which lists active violations (PAS-00108690).



(PAP-00070225)

6. Regulatory History/Enforcement Actions

Permits

There is no information regarding permits in the available file material.

Inspections and Violations

Summarized below are several administrative violations cited for CFC:

- In 1983, CFC was cited by NJDEP for several violations including, but not limited to, spilling hazardous waste (cupola dust) on the ground (PAS-00012571). An Administrative Consent Order was issued on December 14, 1983, by NJDEP for the above-referenced violations (PAS-00012488).

- In 1983, the NJDEP Division of Waste Management issued an administrative order to CFC for reasons that included, but were not limited to, hazardous waste containers were found to be in poor condition with two of the containers split open and the hazardous waste spilled on the ground; those containers were not securely closed and were not stored in a manner that minimizes the risk of the container rupturing or leaking (PAP-00070212).

No additional AOCs were identified from review of the enforcement actions. All violations associated with the former foundry operations were resolved (PAP-00070213).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- *Remedial Investigation Report*, dated November 1992 (PAS-00012678)
- *Remedial Investigation Report*, dated June 1998 (PAS-00032166)
- *Remedial Action Work Plan and Proposed Classification Exception Area*, dated October 2000 (PAS-00032052)
- *Preliminary Assessment Report*, dated May 2015 (PAP-00070186)
- *Site Investigation Report*, dated August 2017 (PAP-00073429)
- *Remedial Investigation Report*, dated September 2017 (PAP-00073039)

Sewer

There is no information regarding sewer sampling data in the available file material.

Soil

PCBs were detected in a discolored 450-square-foot gravel area at the southern end of the facility including low-level residual PCB impacts in soil, specifically Aroclors 1242, 1254, and 1260. The contamination was detected to a depth of 7 feet bgs (below ground surface) (PAP- 00073048-52). Based on the location of the site in relation to the water table, the highest seasonal level of the saturated zone of the aquifer of concern is estimated to be 10 feet below the ground surface (PAS-00012526).

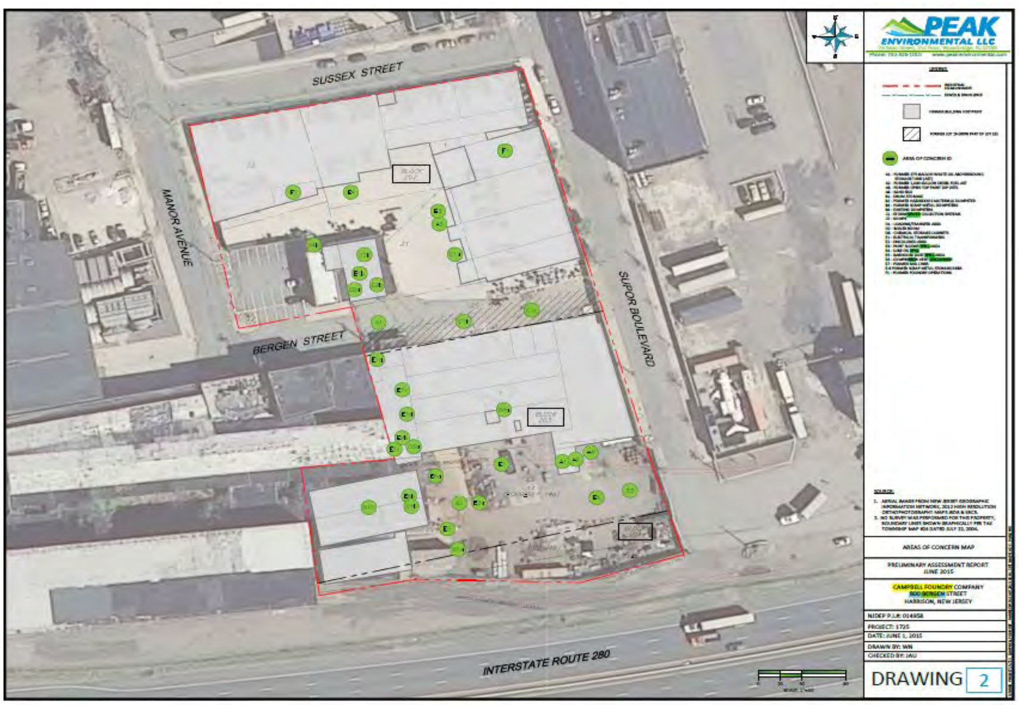
Soil borings, advanced by Peak Environmental during Site and Remedial Investigations, showed the presence of non-indigenous fill materials throughout the facility, generally extending to a depth of 4.5 to 5 feet bgs (PAP-00073054). Examples included metallic, wood, gravel, and brick fragments in the majority of soil borings analyzed (PAP-00073447-48; PAP-00073044; PAP-00073054; PAP-00073266; PAP-00073271). According to the Peak Environmental Site Investigation Report, dated August 2017, PAHs, lead and mercury were all confirmed to be present in the non-indigenous historic fill (PAP-00073448).

According to a *Final Draft Environmental Priority Initiative Preliminary Assessment Report*, dated June, 1992, a release of contaminants to the groundwater and surface water had not occurred and was not suspected. Runoff from the site was noted to flow into the storm drains surrounding the site. All storm drains in the area of the facility lead to combined sewers which discharge into a publicly owned treatment plant. The above cited report stated that these sewers do not discharge directly to surface water; therefore, there is no migration pathway from the site to surface water. The nearest downslope surface water was noted to be the Passaic River (PAS-00012521-30).

As mentioned in Section 4, the soil at the bag house (former AOC 4) was initially sampled in 1996 for metals analysis, including lead (696 mg/kg), which was detected above the NJDEP Soil Cleanup Criteria applicable at that time. Additional soil samples were collected in 1997 and elevated lead concentrations were identified in seven samples. In order to eliminate exposure, an asphalt cap was installed (see deed restricted area). The deed area consists of approximately 8,500 square feet in surface area and concentrations of lead in this area ranges from 6.1 to 5,890 mg/kg. A NFA letter was also issued by the NJDEP for this AOC (AOC 4) at the CFC on September 29, 2005 (PAP-00070217-18).

Remedial Activities

Peak Environmental conducted a site inspection on July 10, 2014. During this site inspection 22 AOCs were identified. The AOCs are presented on the figure below (PAP-00070226). NFA was required for 13 of the AOCs; an Unrestricted Use NFA letter was issued on September 27, 2005, for three AOCs; a restricted-use NFA letter conditional upon the placement of a Deed Notice was issued on September 29, 2005, for one AOC (PAP-00070213-18). Five AOCs (Chemical Storage Cabinets (AOC D3), Discolored Area (AOC E2), Former Rail Lines (AOC E7), Former Scrap Metal Storage Area (AOC E8), and Former Foundry Operations (F1) were recommended that further investigation be conducted (PAP-00073043).



PAP-00070226

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

CANNING GUMM, LLC

Facility Name, Address and Size: Frederick Gumm Chemical Co. Inc. (Gumm); 538 Forest Street, Kearny, New Jersey; 40,000 square feet (PAS-00015855); 0.75 acres since 1969; 200 work days per year (PAS-00015855); One shift per day (PAS-00015855); Up to 50 workers (PAS-00015823).

According to the Remedial Action Work Plan, dated March 2019 (2019 RAWP), the site was split into six property blocks and lots after operations terminated in 2002. The Town of Kearny lots are as follows:

- Block 179, Lot 9.01 (538 Forest Street)
- Block 179, Lot 9.02 (542 Forest Street)
- Block 179, Lot 10.01 (254 Laurel Avenue)
- Block 179, Lot 11.01 (258 Laurel Avenue)
- Block 179, Lot 12.01 (262 Laurel Avenue)
- Block 179, Lot 13.01 (266 Laurel Avenue) (PAP-00272835)

1. **Business Type:** Compounding of chemical cleaners for the metal finishing industry (PAS-00015814; PAS-00015823).

2. **Time Period of Ownership/Operations**

   Operator: Frederick Gumm Chemical Co. Inc. (~1933 to 1998)
   Canning Gumm, LLC (1998 to 2002)
   Owner: Clepo Inc. (~1933 to present)

1933: The Frederick Gumm Chemical Co. Inc. was incorporated in the State of New Jersey on April 15, 1933, with its principal office located in Hoboken, New Jersey (PAS-00016360-62).

1970: A D&B, Inc. Report, dated February 18, 1994 stated Frederick Gumm started the company in 1933 and was succeeded by Frederick J. Gumm as President and Chief Executive Officer in 1970. Robert Sizelove was elected Treasurer and Executive Vice President at the same time. Robert J. Lee was elected Controller in 1985 (PAS-00016341).

1981: The Certificate of Incorporation was restated and amended on July 30, 1981 and identified a Board of Directors and changed the location of Gumm to Lyndhurst, New Jersey (PAS-00016365).

1988: The Certificate of Incorporation was restated and amended on December 19, 1988 and identified a Board of Directors and changed the location of Gumm to the 538 Forest Street, Kearny, New Jersey site (PAS-00016376-81).

1990: A D&B, Inc. Report, dated February 18, 1994 identified Dipsol-Gumm Ventures of Kearny, New Jersey as a Joint Venture of Gumm. The company was started in 1990 and operated a manufacturing zinc plating line (PAS-00016341).

1998: On March 2, 1998, W. Canning U.S.A., Inc. was merged into Gumm (PAS-00016386) through a Stock Purchase Agreement (PAP-00273368), and the merged company was amended to become Canning Gumm, Inc. (PAS-00016389). The Board of Directors for Canning Gumm, Inc. were identified as Frederick J. Gumm, Robert S. Sizelove, and two members from W. Canning plc. in Birmingham, England (PAS-00016392-93). A press release from MacDermid, Incorporated (MacDermid) stated that W. Canning plc. was acquired by MacDermid on December 2, 1998 (PAS-00016346). A report on the cash offer from MacDermid to W. Canning plc. stated the entire capital stock of Gumm was acquired by W. Canning plc. and W. Canning U.S.A., Inc. on March 2, 1998 (PAS-00016709). It is also noted that a lease between Gumm as the tenant and Clepo, Inc. as the landlord for the 538 Forest Street, Kearny, New Jersey site is dated March 2, 1998 (PAP-00273366).

1999: Canning Gumm, Inc. became Canning Gumm, LLC, a Delaware limited liability company, with a business address of 245 Freight Street, Waterbury, Connecticut, based on a Certificate of Merger, dated April 1, 1999 (PAS-00016395).

2000: The site was vacant and Clepo, Inc. granted FGCC Kearny, LLC access to the for site remediation purposes (PAS-00016571). The Certificate of Formation stated FGCC Kearny, L.L.C. was formed April 18, 2000 as a New Jersey Limited Liability Company (PAP-00402699).

2005: MacDermid references the cleanup at the 538 Forest Street site in their Annual Report, but states the owners of the site have primary responsibility for the cleanup costs that exceed the deferred purchase price (PAS-00016428).

The 538 Forest Street, Kearny, New Jersey site was stated to be owned and operated by Gumm in a 1983 letter to New Jersey Department of Environmental Protection (NJDEP) (PAS-00016276). Although it is unclear exactly when Clepo, Inc. took ownership of the site (PAP-00272951), the file material stated that Clepo, Inc. of Kearny, New Jersey owned the facility at least since the 1980s through the present. A summary of this supporting information is as follows:

- According to a 1986 Passaic Valley Sewerage Commissioners (PVSC) Application for a Sewer Connection Permit, dated October 20, 1986, the owner of the site was identified as Clepo, Inc. at the same Forest Street address (PAS-00015855).

- A Certificate of Occupancy, dated September 2, 1987 also identified the owner of the site as Clepo, Inc. (PAS-00015870), and a letter from Gumm to PVSC, dated May 7, 1987 stated that the property was rented from Clepo, Inc. (PAS-00016693).

- In addition, the parent company was listed as Clepo Inc. in a 1989 and a 1990 Toxic Chemical Release Inventory (PAS-00015906, 6247).
- A D&B, Inc. Report, dated February 18, 1994 identified Clepo, Inc. as an affiliated company that was incorporated in 1965 and operated as a real estate holding company for the premises (PAS-00016341).
- A 2000 PVSC Application for a Sewer Use Permit stated the site was vacant and identified Clepo, Inc. of Haddenfield [sic] Road in Cherry Hill, New Jersey as the owner of the site (PAS-00016571).
- The 2019 RAWP stated that each of the parcels with the exception of Block 179, Lot 13.01 are currently owned by Clepo, Inc. Block 179, Lot 13.01 has been redeveloped with a multi-family two-story residence (PAP-00272835).

Operations

According to an undated Release & Pollution Prevention Report for 1992, operations began at the Kearny site in June 1939 (PAS-00016130). A User Change/Pretreatment Checklist, dated March 24, 1988 stated that operations may have begun in 1938 (PAS-00016283). The available records state the 538 Forest Street, Kearny, New Jersey location was operating in 1951, when the Kearny Fire Department inspected the delivery of solvents to the site (PAS-00015800). Several other requests for combustible material permits from the Kearny Fire Prevention Bureau state the site was operating at this location in 1952, 1953, 1955, and 1960 (PAS-00015802, 804, 806, 808).

According to a 2000 PVSC Sewer Use Permit application, the site was vacant and Clepo, Inc. granted FGCC Kearny, LLC access to the site for remediation purposes (PAS-00016571). The PVSC Sewer Use Permit, dated November 1, 2000, allowed discharge of pretreated groundwater through one outlet from November 1, 2000 to October 31, 2005 (PAS-00016613-33). Two Agreements dated November 1, 2005 and November 1, 2006 state FGCC Kearny, LLC would be discharging low strength wastewaters directly to the sanitary sewer from groundwater cleanup or similar operations at the 538 Forest Street, Kearney, New Jersey site (PAS-00016559, 601). An April 5, 2019 letter of authorization from NJDEP allowed discharge to groundwater at the site for in-situ remediation of contaminated groundwater (PAP-00272808).

3. Operational History/COC Use and Presence at the Facility

Gumm blended powder and aqueous raw materials to produce cleaners for the metals finishing industry (PAP-00272835; PAS-00015823, 6005). Raw materials such as alkalis, caustic soda, liquid and powdered acids, surfactants, soaps, detergents, and abrasives were used to make cleaners, acid salts, abrasive tumbling compounds, and paint strippers (PAS-00015823; PAS-00016286). By 1993, the aqueous cleaning products were either sodium hydroxide or sulfuric acid based (PAS-00016103). According to a NJDEP Memorandum, dated December 1, 1993, the site only manufactured one product: a sulfuric acid based brass brightener comprised mostly of

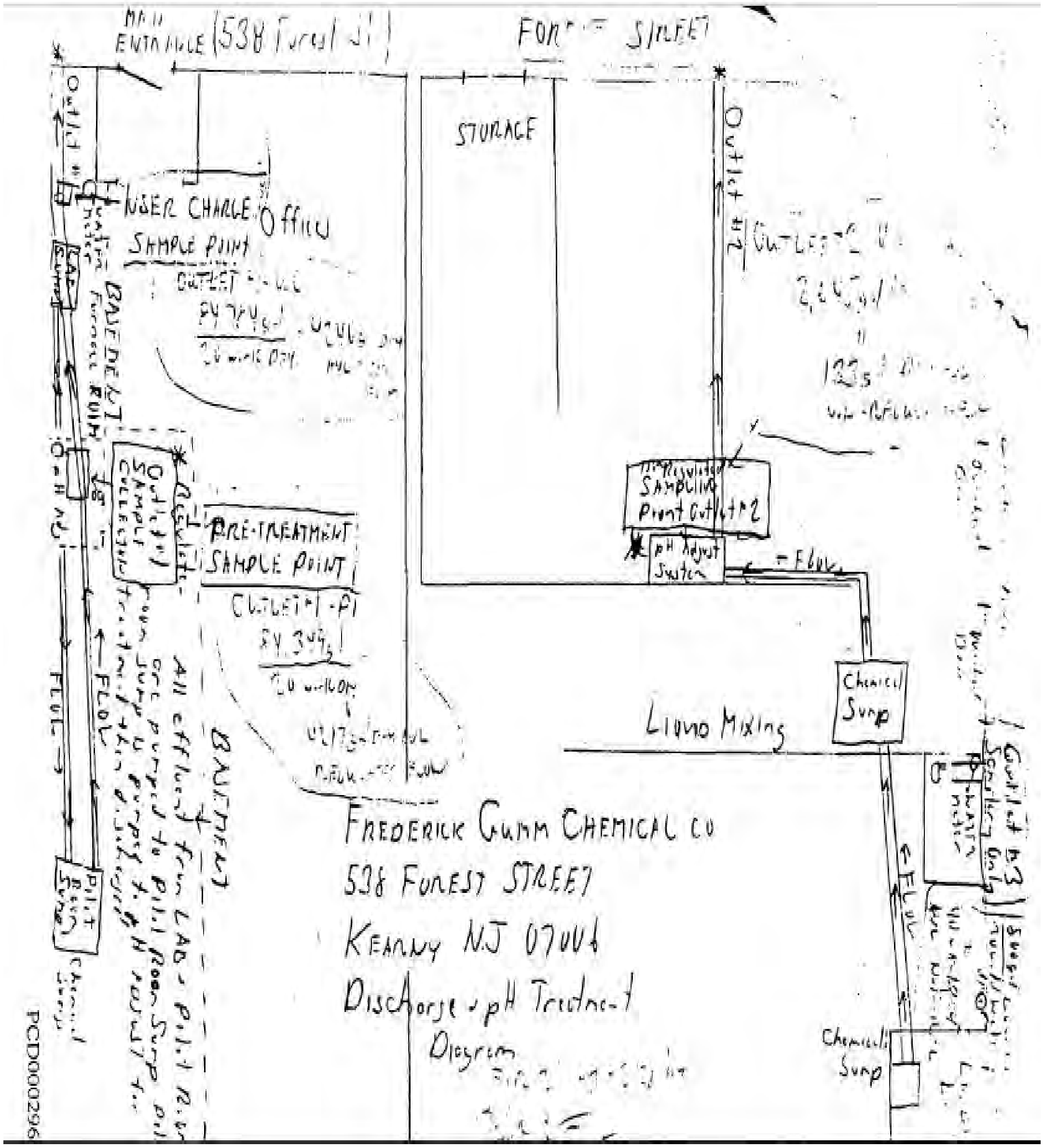
ferric sulfate, sulfuric acid, 1,3-diethylthioyurea, and surfactants. These components were blended inside of a single 330-gallon tank, which was then emptied into either drums or totes (PAS-00016177).

Gumm also operated a small research laboratory on metal finishing processes (PAS-00015823, 6103). In addition, a pilot room was used to occasionally plate one or two metal pieces for a customer in order to prove the process (PAS-00016263).

The site was inspected by the NJDEP in 1983, 1987, and 1993, and it was observed that the site was not generating hazardous wastes (PAS-00015839; PAS-00015881; PAS-00016177). Rinsing of the 330-gallon blending tank generated wastewater, which was discharged to the PVSC (PAS-00016177). According to a letter from Gumm to PVSC, dated March 6, 1991, the company did not discharge any Resource Conservation and Recovery Act (RCRA) hazardous wastes to the PVSC, with the exception of those chemicals that were already reported as a categorical user under 40 CFR 403.12 (b) (PAS-00016261). These chemicals are not identified, but monitoring at this time included metals such as copper, lead, and mercury [see Section 5 (Identified COCs)].

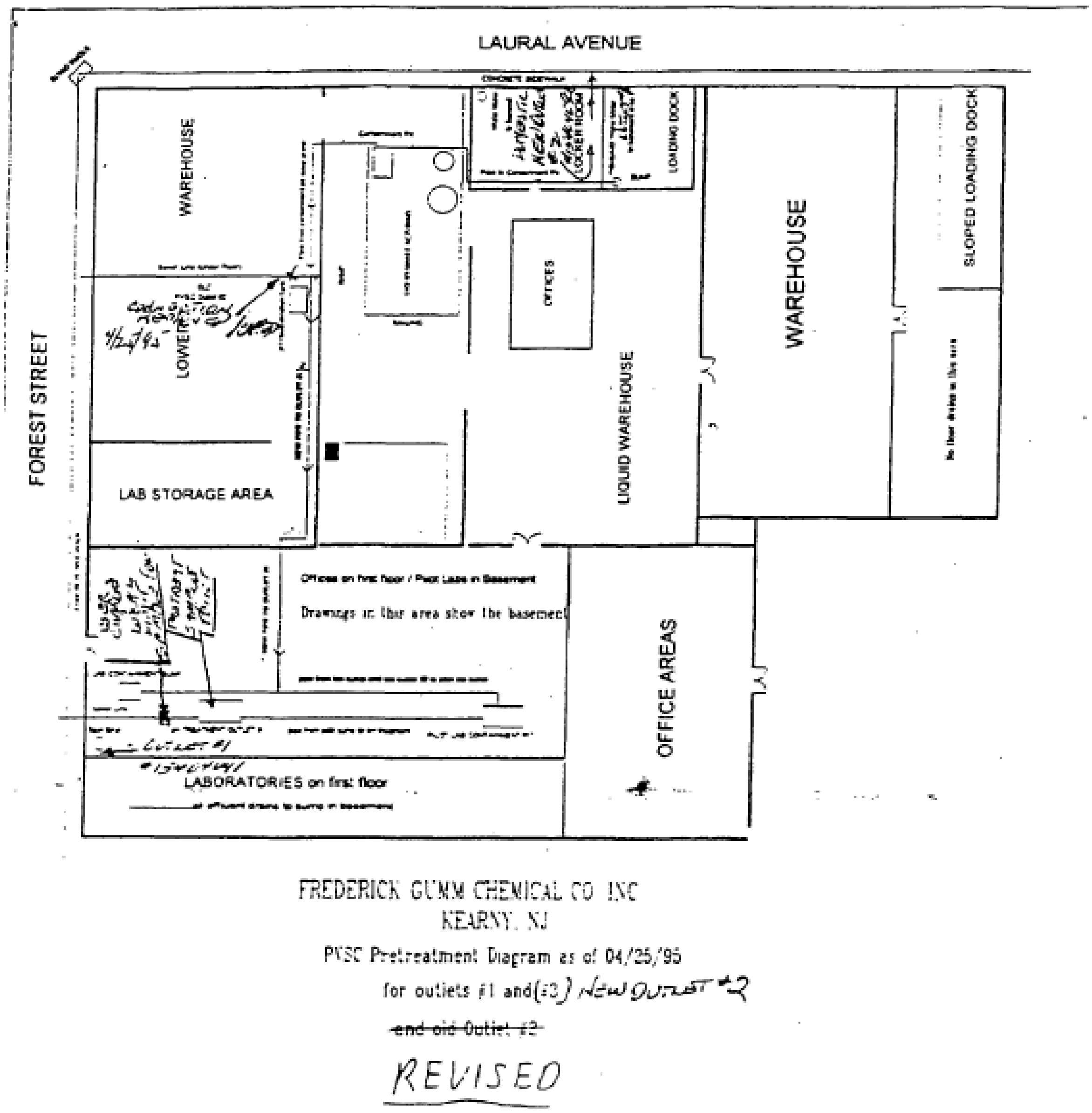
A Waste Effluent Survey, dated March 14, 1972, stated that the site discharged its process water to the PVSC sanitary sewer in 1971 (PAS-00015824). According to the Preliminary Assessment Report, dated August 30, 2004 (2004 PAR), sanitary/industrial discharge from the site was to an onsite septic system from 1960 to 1977 (PAP-00272953). Further information for industrial discharge practices prior to 1960 was not available in the file material.

Gumm obtained multiple sewer permits from the PVSC to discharge their wastewater to the sanitary sewer. A letter from Gumm to the PVSC, dated July 28, 1983 states that the Kearny site operated under permit No. 15404090 from the PVSC, effective date April 21, 1982 (PAS-00016276). Subsequent permit applications and correspondences to PVSC identify up to three outlets to the sanitary sewer. A PVSC letter, dated April 15, 1987 states Outlet No. 1 was from the laboratory and research areas, Outlet No. 2 was from the manufacturing area, and Outlet No. 3 was from the employee sanitary facilities (PAS-00015874-75). According to a PVSC Sewer Connection Permit application, dated October 18, 1991, the outlets were numbered 15404091 (Outlet No. 1), 15404092 (Outlet No. 2), and 15404093 (Outlet No. 3 - sanitary only) (PAS-00016006-13). A diagram of the facility shows Outlet No. 1 and Outlet No. 2, which were located along Forest Street, and Outlet No. 3. The diagram also shows the liquid mixing area.



(PAS-00016110)

Subsequent information identified two outlets from the facility. A Sewer Connection Permit allowed discharge to the PVSC from 1992 to 1997 and identified Outlet No. 1 (15404091-33206-0151) and Outlet No. 2 (15404092-33206-0151) (PAS-00016062-4). In addition, according to a 1993 Toxic Organic Management Plan, all effluent from the production area was discharged through Outlet No. 2 (No. 15404092-33206-0151), and the effluent from the wet analysis and pilot plating laboratory was discharged through Outlet No. 1 (No. 15404091-33206-0151) (PAS-00016103). The following diagram from the 1992 PVSC permit stated it was revised in 1995 and shows Outlet No. 1 in the same location as the previous diagram. However, Outlet No. 2 appeared to now be located on Laurel Avenue, where Outlet No. 3 had been located.



(PAS-00016072)

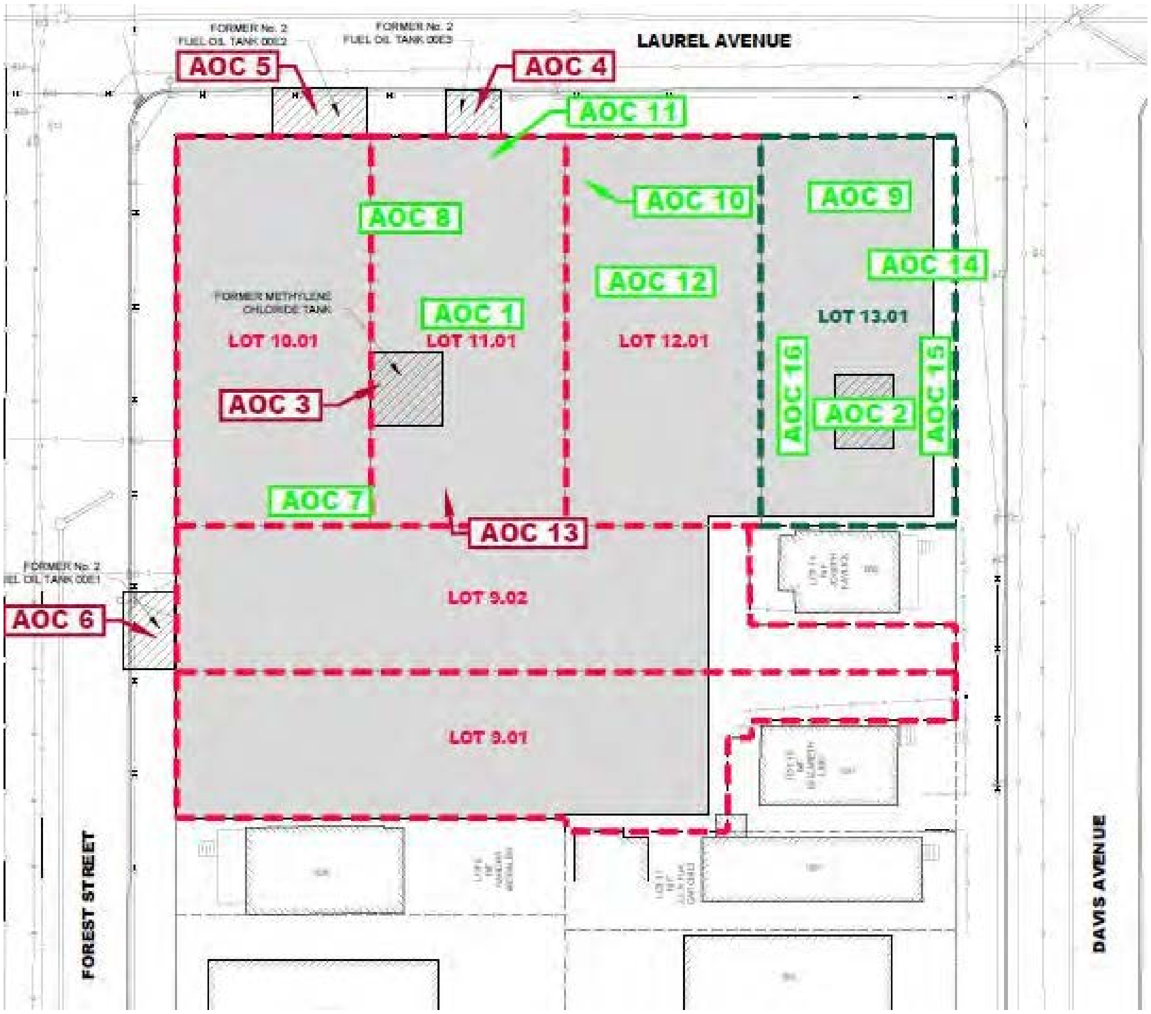
Sampling and analyses of the effluent was performed in 1982. Although a letter from Gumm to PVSC, dated July 28, 1981 stated that Gumm did not expect heavy metals to be in the production area discharge (PAS-00016263), samples of the effluent collected in 1982 detected copper (0.12 ppm) and lead (0.18 ppm) (PAS-00016267). Later samples collected in 1982 and 1983 did not detect lead, but detected copper (0.04 to 0.28 ppm) (PAS-00016272, 74). A 1986 PVSC Sewer Connection Permit application, dated October 20, 1986 stated that copper was “suspected to be present” in the effluent and lead was “suspected to be absent.” According to this application, all other contaminants of concern (COCs) were “known to be absent” in the discharge water

(PAS-00015855-68). Copper and lead were out of compliance one time according to the 1987 Baseline Monitoring Report, dated June 29, 1987 (PAS-00015895). According to a letter from PVSC to Gumm, dated March 10, 1987, the effluent from the plating laboratory was categorized as a Metal Finishing Point Source (PAS-00016703), and monitoring of the effluent began with a Baseline Monitoring Report in 1987 (PAS-00016695). Elevated lead was detected in effluent samples in 1982, 1987, 1988, 1989, 1990, 1991, and 1994 [see Section 6 (Regulatory History/Enforcement Actions)] (PAS-00015895-97, 5921, 5956, 5992, 5996, 6183, 6185-86; PAS-00016267, 6279, 6289). In responses to the violations, a September 16, 1991 letter from Gumm to PVSC stated that they did not use lead in their production area (PAS-00015898, 998) or analytical or plating laboratories (PAS-00016281), but stated that lead may be entering the wastewater system from experiments in their laboratory (PAS-00016291).

According to chemical inventories from 1987 to 1993, lead compounds, mercury, and copper cyanide were stored in the laboratory. The liquid mixing area had lead compounds and cupric sulfate (PAS-00016078, 80; PAP-00273472, PAP-00273482; PAP-00273493; PAP-00273571, 79-80; PAP-00273581, PAP-00273596-8, 619-21; PAP-00273699, 709-10, 716, 722; PAP-00273701, 9, 18, 26).

Up to eight underground storage tanks (USTs) had been present at the site, storing High Flash, AMSCO 460 solvent, Stoddard solvent, methylene chloride, and No. 2 fuel oil. The methylene chloride and two of the No. 2 fuel oil USTs were stated to have leaked. The USTs were all removed by 1990 (PAS-00015946).

In addition, as discussed in the 2019 RAWP, 16 Areas of Concern (AOCs) related to methylene chloride and No. 2 fuel oil contamination were identified in 2004 (PAP-00272840). The figure below of the AOCs was provided in the 2019 RAWP. The AOCs in green have No Further Action (NFA) status, while the red AOCs required further action or evaluation. The former No. 2 fuel oil USTs are AOCs-3, -4, and -5. Soil samples collected from Lots 10.01 and 11.01 detected PAH compounds (naphthalene and 2-methylnaphthalene) at depths of approximately seven feet below ground surface (bgs) to the depth of the groundwater table at 17.5 feet bgs (PAP-00272845, 2937). Two PAH compounds [benzo(a)pyrene and benzo(a)anthrancene] were detected in soil samples collected from Lots 9.01, 9.02, and 12.01 (PAP-00272872-3, 2937).



(PAP-00272935)

4. Identified COCs

- PAHs (detected)
- Copper (used, stored, detected)
- Lead (stored, detected)
- Mercury (stored)

PAHs

As stated in the Revised Discharge Investigation and Corrective Action Report, dated August 23, 1990, post-removal samples for the Stoddard Solvent and High Flash Solvent tanks did not state a release had occurred and/or there were no holes in the tanks at the time of removal. However, this report stated USTs with Heating Oil No. 2 were removed in 1990 with a reported release suspected (PAS-00015946).

According to the 2019 RAWP, soil samples containing concentrations of PAHs (naphthalene and 2-methylnaphthalene) extended from approximately seven feet bgs to the depth of the groundwater table at 17.5 feet bgs (PAP-00272845). Two PAH

compounds [benzo(a)pyrene and benzo(a)anthrancene] were detected at concentrations exceeding screening levels in soil samples collected from Lots 9.01, 9.02, and 12.01 (PAP-00272872-3, 2937). See the discussion below for the Historic Fill.

Copper

As reported in a letter to the Kearny Department of Combustibles from Gumm, dated May 2, 1980, minimal quantities of copper cyanide were required for their business (PAS-00015831).

According to a June 29, 1987 letter to the PVSC from Gumm, copper was detected in effluent samples, but was only noted to exceed the PVSC criterion one time (in 1987). Gumm responded that the source of the copper was likely samples analyzed as a service to customers. To minimize copper contamination, Gumm reduced the sample size used in the analyses and returned the unused portion of the sample to customers (PAS-00015895). The following table lists the copper concentrations in effluent samples collected:

Copper Concentrations in Effluent Samples		
Sample Date	**(mg/L)**	**Reference**
7/6/1981	0.10	PAS-00016265
5/24/1982	0.12	PAS-00016267
8/17/1982	0.28	PAS-00016272
11/15/1982	0.04	PAS-00016274
6/25/1987	4.535	PAS-00016314-6, PAS-00015899-901
	2.044	
	0.162	
9/25/1991	0.13	PAS-00016000-1
11/15/1994 (analysis date)	0.124	PAS-00016223
	0.022	
11/11/1994	0.019	PAS-00016224
11/15/1994	0.085	
11/16/1994	0.029	PAS-00016225
11/17/1994	0.027	

According to chemical inventories from 1987 through 1993, the liquid mixing area stored cupric sulfate. Starting in 1989, copper cyanide was stored in the laboratory (PAP-00273472, PAP-00273493; PAP-00273581; PAP-00273592, 616; PAP-00273699, 716; PAS-00016078-96). Based on an undated PVSC Slug Loadings Control Information, copper was stored in DOT approved containers at the facility (PAS-00016179-80).

Lead

Lead was detected in multiple effluent samples collected at the site from 1982 to 1994 (PAS-00015895-7, 5921, 5956, 5992, 5996, 6183, 6185-6; PAS-00016267, 6279, 6289). The maximum detected concentration of lead was 3.44 milligrams per liter (mg/L) on

January 19, 1994 (PAS-00016185). Several violations of the PVSC lead discharge criteria occurred [see Section 6 (Regulatory History/Enforcement Actions)] and Gumm noted in response to these violations that lead was not used in their production processes (PAS-00015898, 998) or analytical or plating laboratories (PAS-00016281), but stated that lead may be entering the wastewater system from experiments in their laboratory (PAS-00016291). Wastewater discharge volumes are discussed in Section 5 of this report.

The following table lists the lead concentrations in effluent samples collected:

Lead Concentrations in Effluent Samples		
Sample Date	**(mg/L)**	**Reference**
5/24/1982	0.18	PAS-00016267
6/25/1987	1.175	PAS-00016314
1/29/1988	1.22	PAS-00016289
1/27/1989	3.13*	PAS-00015921
10/9/1989	0.055	PAS-00015926
7/18/1990	2.04	PAS-00015956
7/20/1990	1.27	PAS-00015956
7/19/1991	0.596**	PAS-00015992
9/25/1991	0.038	PAS-00016000-1
1/19/1994	3.44	PAS-00016185
11/15/1994 (analysis date)	0.004	PAS-00016223
	0.015	
11/11/1994	0.042	PAS-00016224
11/15/1994	0.005	
11/16/1994	0.054	PAS-00016225
11/17/1994	0.006	

*No units specified
**Weekly average concentration

According to chemical inventories from 1987 through 1993, lead compounds were stored in the laboratory and the liquid mixing area (PAP-00273482; PAP-00273571, 79-80; PAP-00273596-7, 619-20; PAP-00273701, 9, 18, 26; PAS-00016078-96). Based on an undated PVSC Slug Loadings Control Information, lead was stated to be stored in Department of Transportation (DOT) approved containers at the site (PAS-00016179-80).

Mercury

According to chemical inventories from 1987 through 1993, mercury was stored in the laboratory as mercuric sulfate, mercuric chloride, and mercury (PAP-00273472, PAP-00273580; PAP-00273597-8, 620-1; PAP-00273709-10, 27; PAS-00016078-96). Mercury was not detected in effluent samples collected in 1994 (PAS-00016223-5). Previous effluent samples were not analyzed for mercury.

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PAHs detected at the site in soils are presented in the table below (PAP-00274019).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Benzo(a)anthracene	1.6 mg/kg
Benzo(a)pyrene	1 mg/kg
Benzo(b)fluoranthene	1 mg/kg
Benzo(k)fluoranthene	0.95 mg/kg
Dibenzo(a,h)anthracene	0.21 mg/kg
Indeno(1,2,3-cd)pyrene	0.58 mg/kg

5. COC Pathways

Sanitary Sewer

As stated in a Memorandum report of a Hazardous Waste Inspection, dated December 1, 1993, the blending process utilized by Gumm did not generate hazardous wastes; however, a rinsing of the blending tank did create wastewater that was discharged into

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle No. 41 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

the PVSC sanitary sewer under permit No. 15404093 (PAS-00016177). The presence of metals in this effluent were monitored for as discussed in Section 4, Identified COCs.

A Waste Effluent Survey, dated March 14, 1972, listed 445,000 gallons of used water that was discharged to the PVSC sanitary sewer in 1971. This survey also stated that no water was discharged to storm sewers, rivers, or ditches (PAS-00015824).

According to the 2004 PAR, sanitary/industrial discharges from the site were to an onsite septic system from 1960 to 1977 (PAP-00272953). Information for previous discharge practices of the process wastewater was not available in the file material.

According to a letter to PVSC from Gumm, dated July 28, 1981, Gumm estimated the total daily discharge from the production and laboratory areas each as 473 gallons per day, totaling 946 gallons per day (PAS-00016263). A PVSC Application for a Sewer Connection Permit, dated October 20, 1986 stated that Gumm discharged an estimated 1,048,787 gallons of process water to the sanitary sewer in 1985 (PAS-00015856). The application identified only one outlet No. 15404090, which discharged 4,920 gallons daily (PAS-00015859).

A letter to the PVSC from Gumm, dated April 15, 1987, defined three outlets and approximated the total volumes discharged to the PVSC from each outlet in 1986 based on readings from the two water meters (Laurel Avenue and Forest Street) and estimates of water usage: Outlet No. 1 was from the laboratory and research areas, which used an estimated 85% of the reading from the Forest Street water meter, or 631,540 gallons; Outlet No. 2 was estimated as 35% of the reading from the Laurel Avenue meter (50% was estimated to go into the product and 15% was estimated to be sanitary use), or 250,073 gallons of process waste water plus any rain water from a roof drain; and, Outlet No. 3 was from the employee sanitary facilities and was an estimated 15% of the Laurel Avenue water meter reading, or 107,174 gallons (PAS-00015874-5). According to a 1991 PVSC Sewer Connection Permit application, the wastewater was discharged to the combined sewer over the period from July 1, 1990 to June 30, 1991. The daily flow for each outlet was listed as 3,000 gallons for 15404091 (Outlet No. 1), 1,000 gallons for 15404092 (Outlet No. 2), and 150 gallons for 15404093 (Outlet No. 3) (PAS-00016005-7).

According to a 1992 Release & Pollution Prevention Report, dated June 1993, water was discharged to the publicly owned treatment works (POTW) sewer and not to any surface water, navigable waters, tributary system, or groundwater (PAS-00016131).

According to an undated Toxic Organic Management Plan, which was to be implemented by April 1, 1993, all effluent from the production area was discharged to the PVSC through Outlet No. 2 (No. 15404092-33206-0151) at an average volume of 400 gallons per day. The effluent from the wet analysis and pilot plating laboratory was discharged through Outlet No. 1 (No. 15404091-33206-0151). An average of 4,300 gallons per day was discharged through this outlet. The pH of both effluents was monitored and a constant pH adjustment system was used for both outlets (PAS-00016103).

A sewer use permit No. 15220027 from the PVSC allowed discharge of pretreated groundwater through one outlet (No. 15220027-1) to the PVSC Treatment Works from 2000 to 2005 (PAS-00016613-15). This was after operations at the site ceased. The application for the permit stated the groundwater was contaminated with methylene chloride and would be pretreated prior to discharge to the combined storm sewer system (PAS-00016586). Two agreements dated November 1, 2005 and November 1, 2006 stated that FGCC Kearny, LLC would be discharging non-hazardous low strength wastewaters generated from groundwater cleanup or similar operations at the Forest Street site (PAS-00016559-60, 602-3).

The Ivy Street CSO is located approximately one mile from the former site location (PAS-00015795). The CSO served as the largest collection area among all of the Kearny-Harrison overflows, covering an area of 607 acres. The Ivy Street CSO discharged directly into Frank's Creek, which ran from the CSO discharge point approximately one mile before entering the Passaic River in an area subject to tidal influence and historic navigational dredging (PAS-00016434).

Spills

As reported by an undated PVSC Slug Loadings Control Information Report, the production area and the laboratory had lined containment pits that were designed to hold any releases that may have occurred. There were no floor drains in the warehouse, manufacturing or laboratory areas that led directly to the sewer; instead, these pits were pumped to pH treatment and discharge points (PAS-00016179).

The Revised Discharge Investigation and Corrective Action Report, dated August 23, 1990 noted Gumm had three USTs that were found to have leaked in 1990. These tanks contained methylene chloride and No. 2 fuel oil (PAS-00015946). In addition, LNAPL indicative of No. 2 fuel oil was found in three site monitoring wells (PAS-00016200-1, 204). According to the 2019 RAWP, soil samples containing concentrations of PAHs extended from approximately seven feet bgs to the depth of the groundwater table at 17.5 feet bgs (PAP-00272845).

6. Regulatory History/Enforcement Actions

Inspections

Inspections of the Kearny site performed by NJDEP in 1983, 1987, and 1993 determined that there were no hazardous wastes generated at the site (PAS-00015836-49, 878-93). The EPA ID NJ0002175636 had been assigned in 1981 (PAS-00016043-44) and the company elected to keep it for emergencies and in case they needed a change in generator status (PAS-00015836-49, 5878-93, 6177).

Violations

Several violations for elevated metals concentrations in effluent samples were noted in the file material. The following table includes the dates of the relevant violations,

concentrations detected, and the outlet or PVSC permit number noted in the violation. In addition, the responses made by Gumm to address the exceedances are also included.

Violations					
Violation Date	**COC**	**mg/L**	**Permit No.**	**Response**	**References**
6/29/1987 8/3/1987	Copper Lead	NS	NS – BMR Deficiency List	To minimize copper contamination, will reduce sample size and return unused sample to customers. Lead was not used in the analytical or plating laboratories. Testing to see if lead was from water pipes.	PAS-00015895-6 PAS-00016279-81
6/25/87-7/21/87	Lead	0.43 1.18	15404090-3306-0151	Pretreatment monitoring report notes they were out of compliance for lead. Lead was not used in the process and was resampled.	PAS-00015897-8 PAS-00016312-4
1/29/1988	Lead	1.22	NS	Lead was not used in metal plating processes, but it was possible lead could come from experiments in the laboratories.	PAS-00016289-91
1/27/1989	Lead	3.13	15404093	No response in the file material, but high result was noted in a memorandum not a notice of violation. Units were not specified.	PAS-00015921
7/18/1990	Lead	2.04 1.27	15404093 (Outlet No. 1)	Unknown accidental discharge. Subsequent sampling did not exceed.	PAS-00015956-60
7/19/1991	Lead	0.596	15404092	Lead was not used in production area where exceedance occurred. Possibly a one-time occurrence due to floor washing.	PAS-00015992, 96-98
2/3/1994	Lead	3.44 0.74 0.66	15404091	Furnace had leaked and sump pump stopped, leading to flooding of the basement. Lead found in pipes/repair of furnace.	PAS-00016185-88

NS= Not specified
BMR= Baseline Monitoring Report

Permits

According to a July 28, 1983 letter to the NJDEP, Gumm operated under permit No. 15404090 from the PVSC, effective date April 21, 1982. The letter states that analysis for metals was performed at Gumm's own laboratory; results of a "typical analysis" were lead at 0.00 ppm and copper at 0.04 ppm. Since metals concentrations were consistently below these levels, the analyses were discontinued effective April 1, 1983, with the approval of PVSC (PAS-00016276-7).

According to a PVSC Sewer Connection Permit application, dated October 20, 1986, the site discharged to the sanitary sewer through outlet No. 15404090 that contained industrial waste (PAS-00015858). A letter from Gumm to PVSC, dated April 15, 1987 describes three outlets that the site discharged wastewater through: the employee sanitary facilities (Outlet No. 3); the production area (Outlet No. 2); and, the laboratory and research facilities (Outlet No. 1) (PAS-00015874). As defined in the 1991 PVSC application, Outlets No. 1 (15404091) and No. 2 (15404092) contained industrial waste with constant pH monitoring and adjustment, and Outlet No. 3 (15404092) was sanitary only and did not contain industrial waste (PAS-00016003-19). The permits associated with these applications were not available in the file material.

The PVSC Sewer Connection Permit No. 15404092 was effective April 21, 1992 through April 21, 1997, and defined two outlets from the site to the PVSC treatment works. The permit defined limits for the concentrations of contaminants in the wastewater, and stated Outlet No. 1 was required to be monitored for lead (daily maximum of 0.6 mg/L) and other contaminants (PAS-00016058-64).

According to a 2000 PVSC Sewer Use Permit application, the site was vacant and Clepo, Inc. granted FGCC Kearny, LLC access to the facility for site remediation purposes (PAS-00016571). The permit No. 15220027 from the PVSC allowed discharge of pretreated groundwater that was contaminated with methylene chloride through one outlet to the sanitary sewer from 2000 to 2005 (PAS-00016573, 613-34). Two agreements dated November 1, 2005 and November 1, 2006 state FGCC Kearny, LLC would be discharging non-hazardous low strength wastewaters generated from groundwater cleanup or similar operations at the Forest Street site (PAS-00016559-60, 602-3).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- A Remedial Investigation Soil Sampling Report, dated September 16, 1993 concluded that soil concentrations of total petroleum hydrocarbons did not exceed the NJDEP cleanup criteria (PAS-00016138-43).

- From 1998 to 2004, remedial investigation activities characterized soil, groundwater, and LNAPL, as well as installed a free product recovery system, according to the 2019 RAWP. The site building was demolished in 2002 and 2003 (PAP-00272839-40).
- According to the NJDEP Site Remediation Program Cover Certification Form, a Preliminary Assessment Report (PAR), Remedial Investigation (RI) Report, and Remedial Action Work Plan were all submitted in 2004 (PAP-00272804). The 2004 PAR concentrated on the one lot (Block 179, Lot 13.01) that was planned to be sold. The 2004 RI Report identified 16 AOCs related to methylene chloride and No. 2 fuel oil contamination (PAP-00272840).
- A 2008 Supplemental RI Report included the collection of soil samples for analysis of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), with the goal of additional horizontal and vertical delineation of methylene-chloride impacted soils, according to the 2019 RAWP (PAP-00272840-1). The 2008 Supplemental RI Report is provided as Appendix A to the 2019 RAWP (PAP-00273972).
- The Remedial Investigation Report, dated April 2016 (2016 RI Report) defined the extent of contamination related to methylene chloride and LNAPL (PAP-00273799).
- The 2019 RAWP summarized the previous investigations (PAP-00272838-41) and proposed remedial activities for the PAH contamination in soil and LNAPL in groundwater (PAP-00272874-5).

Soil

The 2016 RI Report identified petroleum hydrocarbons in vadose zone soils at the northern site boundary at Laurel Avenue and along the western site boundary at Forest Street, consistent with the locations of free-phase LNAPL. In addition, concentrations of PAHs (naphthalene and 2-methylnaphthalene) are present in vadose zone soils at the locations of the free-phase LNAPL (PAP-00273799).

As summarized in the 2019 RAWP, AOCs-04, -05, and -06 were identified as the former No. 2 fuel oil USTs. Results from the 2004 RI and 2008 Supplemental RI Report state naphthalene concentrations in soil exceeded the direct contact soil remediation standard (SRS), while 2-methylnaphthalene was not reported at concentrations above the direct contact SRS. Concentrations extended from approximately seven feet bgs to the depth of the groundwater table at 17.5 feet bgs (PAP-00272845). In addition, one PAH compound [benzo(a)pyrene] was detected above the SRS, while two PAH compounds [benzo(a)pyrene and benzo(a)anthrancene] were detected above the impact-to-groundwater standard in soil samples collected from Lots 9.01, 9.02, and 12.01 (PAP-00272872-3, 2937).

A NFA Letter for soils on one lot (Block 179, Lot 13.01) at the site was issued by NJDEP on September 28, 2010 (PAP-00265070-1). This approximately 5,000 square feet portion of the site was sold by Clepo, Inc. after the preliminary assessment for this lot was performed in 2004 (PAP-00272948, 65).

Sewer

Effluent from the site was discharged to the PVSC, and characterization of the effluent began in 1982 (PAS-00016267). The maximum concentration of lead in effluent was 3.44 mg/L detected on January 19, 1994 (PAS-00016185), and the maximum concentration of copper was detected at 4.535 mg/L in 1987 (PAS-00016314-6). Based on water usage in 1986, it was estimated that the site discharged 631,540 gallons from the laboratory facilities through Outlet No. 1 and 250,073 gallons of process waste water from Outlet No. 2 (PAS-00015874-5). In 1993, an average of 4,300 gallons per day was discharged through Outlet No. 1, and an average volume of 400 gallons per day was discharged through Outlet No. 2, according to an undated Toxic Organic Management Plan (PAS-00016103).

Remedial Activities

The leaking No. 2 fuel oil USTs were removed in 1990 and LNAPL was found in multiple monitoring wells (PAS-00015946, 6204). The 2016 RI Report identified petroleum hydrocarbons in vadose zone soils at the northern site boundary at Laurel Avenue and along the western site boundary at Forest Street, consistent with the locations of free-phase LNAPL. In addition, concentrations of PAHs (naphthalene and 2-methylnaphthalene) are present in vadose zone soils at the locations of the free-phase LNAPL (PAP-00273799).

According to the 2019 RAWP, the proposed RA to address the PAHs contamination in soil for the impact-to-groundwater is establishment of institutional controls and construction of a low-permeability cap engineering control (PAP-00272874-5).

8. Summary of Asserted Defenses

Canning Gumm asserts that the site’s discharges to the PVSC system were federally permitted discharges with very limited deviations. COC releases related to USTs at the site are subject to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) petroleum exclusion.

Diamond Alkali OU2 Allocation
ADR Confidential
Facility Data Report

CBS CORPORATION

Facility Name, Address and Size: CBS Corporation (CBS) successor to Westinghouse Electric Corporation (Westinghouse), 95 Orange Street, Newark, New Jersey, Block 47, Lot 40 (PAP-00086829) covered 3.45 acres (PAS-00009660). A 1971 Westinghouse Environmental Control Survey noted that at the time, the plant operated two shifts per day five days a week and employed 1,400 (PAS-00009765). According to a 1972, Waste Effluent Survey, Westinghouse Electric Corp. employed the same number of people, but increased production to three shifts per day, five days a week (PAS-00009660). In 1981, the plant employed 500 employees working two shifts (PAS-00009825).

1. **Business Type:** Westinghouse manufactured various types of electrical equipment including relays, meters, communication channel equipment, analog and digital instruments, sensing devices and transducers, instrument auxiliaries, multiplying resistors and portable instrument transformers and computer systems for relay control. Operations included metal punch presses, stamping, cutting, grinding, milling, drilling, plating, finishing, tumbling, degreasing, spray painting, photo developing and printing (PAP-00347544).

2. **Time Period of Ownership/Operations**

    Operator: 1889 – December 1984 (PAP-00347542)
    Owner: 1891 – December 1983 (PAP-00347543)

1884: United States Electric and Lighting Company first operated in the eastern portion of the block (now known as University Avenue). The western portion of the block was residential with some industrial properties along Lackawanna Avenue (PAP-00086834).

1889: Reportedly George Westinghouse leased the plant in 1889 and later purchased both the operations and property in 1891 (PAP-00086834).

1891: George Westinghouse purchased additional parcels on the block and expanded production. The facility became the Newark Works comprising Block 47, Lot 40 (PAP-00086834).

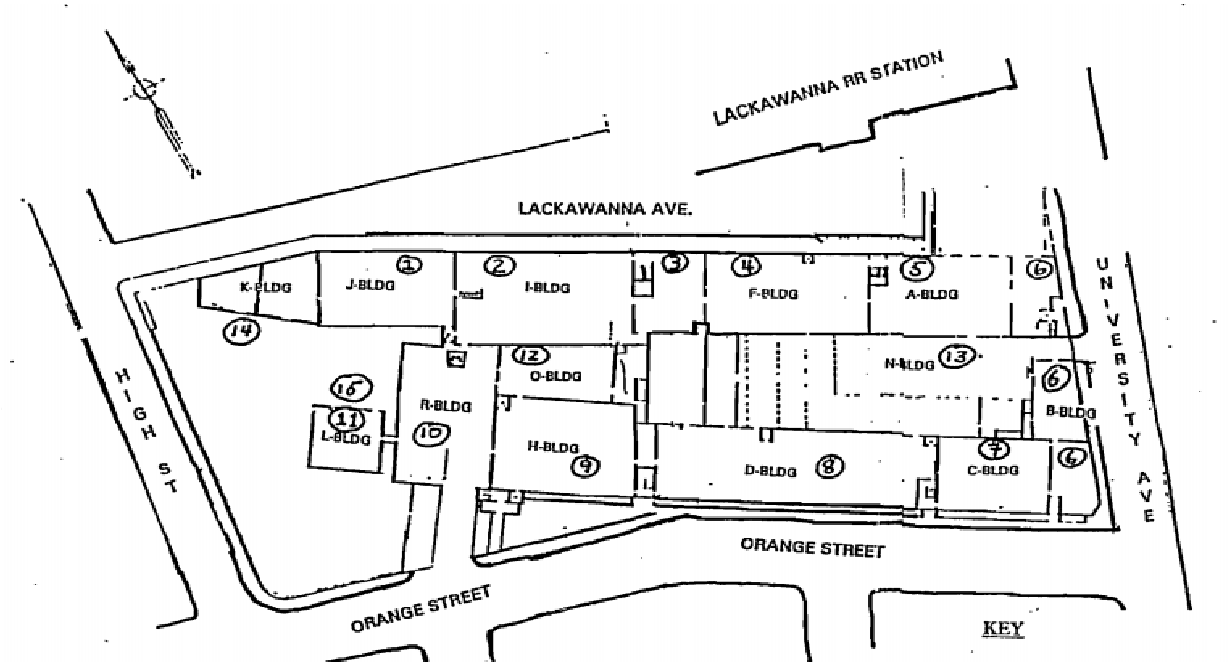
1895: Operations at Newark Works ceased (PAP-00086834).

1900s: Newark Works restarted manufacturing at the facility during World War I and produced communication equipment (PAP-00086834).

1920s: The facility primarily produced protective relays and watt meters and became the Meter Division. It later became the Relay-Instrument Division, and Westinghouse constructed additional buildings into the 1970s that covered 3.45 acres (PAP-00086834).

1960s: Westinghouse continued to expand its operations through the twentieth century and underwent a plant modernization in the early 1960s (PAP-00347553).

1983: In 1983 Westinghouse ceased operations at the site and the property was sold to New West. New West leased to a variety of commercial and industrial tenants, and the buildings fell into disrepair with the last tenant leaving by 2000 (PAP-00086835).



(PAP-00347546)

The construction years of several buildings are as follows (PAP-00347469; PAP-00347779, 804):

Building A: 1884	Building F: 1894	Building O: 1959
Building B: 1885	Building H: 1911	Building P: 1966
Building C: 1885	Building I: 1911	Building R-1967
Building D: 1904	Building J: 1890	

3. Operational History/COC Use and Presence at the Facility

Early operations at the facility included manufacturing of street railway motors and controllers, arc lamps, volt meters and amp meters. Production later included a wide range of electrical devices, such as electrical meters/instruments, heating apparatuses, recording devices, protective relays, automotive generators, oscillographs, fan motors and radio speakers. A radio broadcast station, WJS, was once located in the buildings (PAP-00086834). The facility operated a variety of plating and steel cleaning operations; however, only those involving or potentially involving the allocation COCs are discussed in this Facility Data Report (PAS-00009739-40; PAS-00009731-32, 35; PAS-00009733-34, 37; PAS-00009725-53)

A 1972 Westinghouse Waste Effluent Survey documented production of electrical machinery and equipment at an average production rate of 15,000 to 20,000 units per month. The parts were fabricated in the press or machine shops, and assembled into complete units (PAS-00009660). A 1971 Environmental Control Survey for Westinghouse noted that the facility generated 1 ton of sludge and metal scrap every 20 days; one ton of plastic waste every 40 days; one ton of garbage every 10 days; and one ton of wood waste every five days. These solid wastes were disposed off-site at a private landfill (PAS-00009770).

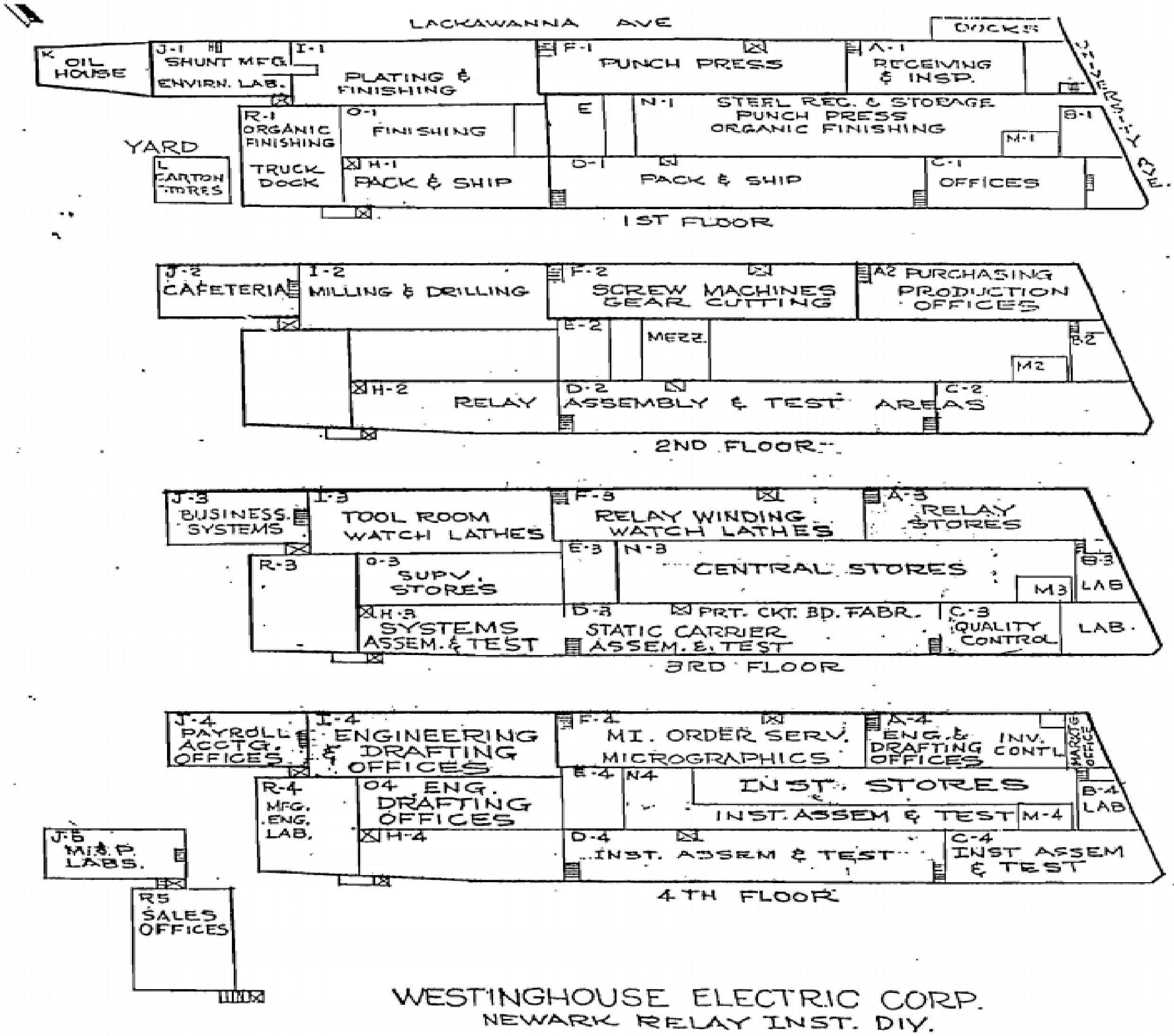
According to August 1982 air permit applications, operations at the site included steam treating steel with naphthenic base oil (PAS-00009721-22).. According to *Components of Paraffin-Base and Naphthenic-Base Crude Oil and Their Effects on Interfacial Performance,* naphthenic-base crude oil contains the PAHs napthalene, phenanthrene and chrysene (https://m.scirp.org/papers/95601).

According to a 1980 Westinghouse Environmental Control Survey, the copper plating process consumed between 70 and 90% of the chemicals; however, the system flushed between 10 and 30% of the chemicals and 100% of the rinse (PAS-00009815). According to an August 1982 Air Pollution Control Permit Application, copper plating operations started in 1960 (PAP-00425611).

According to Westinghouse's 1997 response to an EPA Request for Information, Westinghouse also had an oil and metal chip removal process that used an emulsifiable solvent cleaner to remove heavy oil films, solid dirt and loose metallic chips from metals. Suitable parts were placed in a barrel and tumbled for 2 minutes. Excess cleaning solution was drained before transferring wet parts out of the solution and into a water rinse (PAS-00009754).

Besides degreasing and copper plating, a 1981 Industrial Hygiene Audit Report noted that other processes included: a spray painting operation anda machining operation that used cutting oils; and a coil winding operation that incorporated hand soldering (PAS-00009828). The report did not document specific COC use; however, paints can contain heavy metals and cutting oils can contain PCBs. For example, the report states that personal air samples should be obtained from painters in order to document any exposure to lead if any lead based paints were used; as well as noting that individuals conducting hand soldering were also required to have personal air samples for lead (PAS-00009830-31).

The facility shutdown operations in 1983 (PAS-00009760). A November 1983 letter from Florida Plating, Inc., discussed the removal of: Plating solutions contained in drums;; copper bussing; a 20-foot-long paint booth; and other plating inventory from the Westinghouse facility (PAS-00009698-100).



Buildings A, F, I, J and K Schematics (PAP-00347545)

According to the May 2002 *Interim Remedial Investigation Report*, the following storage tanks were located on the former Westinghouse Property.

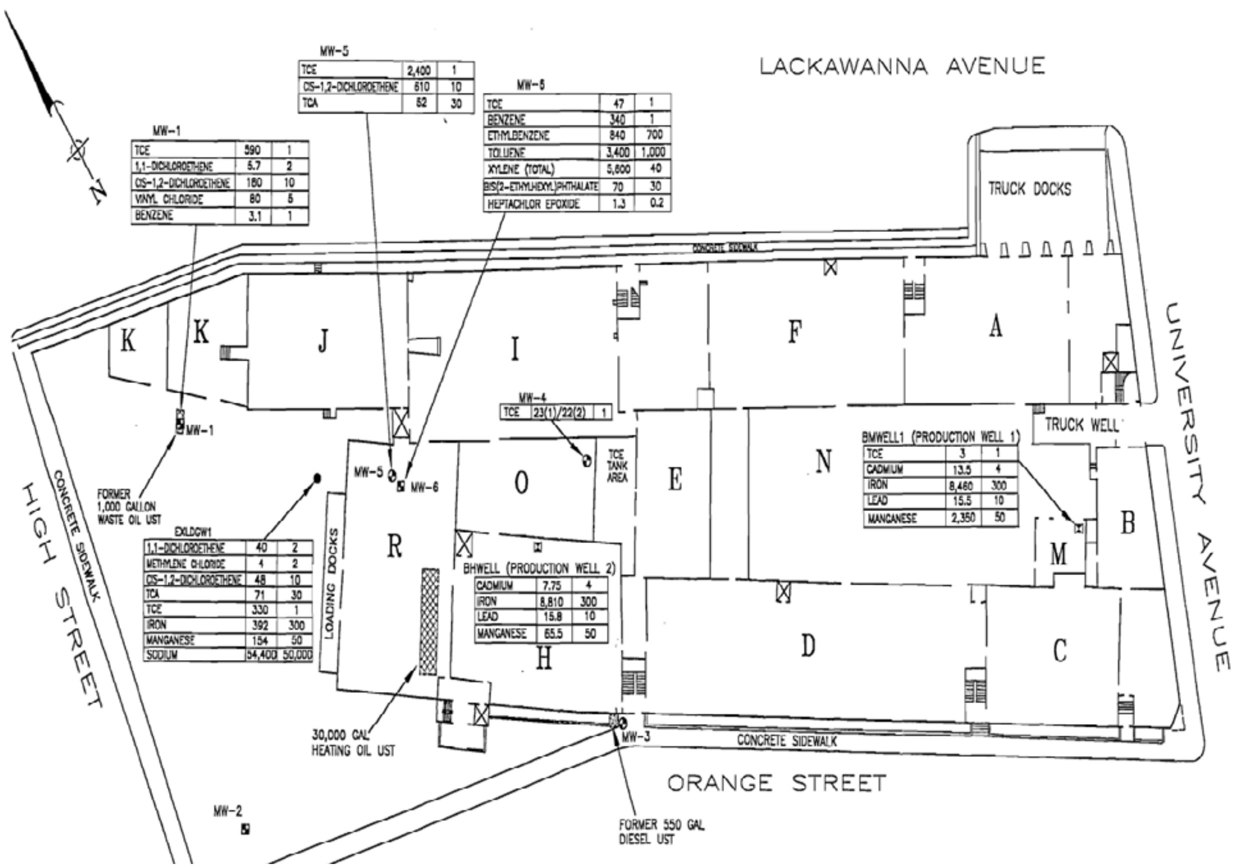
- On May 15, 2001, a 550-gallon diesel UST and a 1,000-gallon waste oil UST were removed from the site. The 550-gallon diesel UST was located between Building H and the sidewalk along Orange Street, and the 1,000-gallon waste oil UST was just south of Building K (PAP-00347919). According to the *Preliminary Assessment Report* (PAR), the diesel UST was previously used to fuel a former Cummings Generator. Contaminated soils were encountered in the excavation area and were removed. Groundwater was not encountered (PAP-00347920). According to the 2003 remedial Investigation Report, based upon the results of post-excavation soil sampling, no residual contamination or compounds of concern at levels exceeding the corresponding NJDEP soil cleanup criteria were detected at the 550-gallon diesel fuel and gasoline USTs (PAP-00348130).

- Based on the historical Westinghouse maps, and the *Preliminary Assessment Report* (PAR), a 1,000-gallon waste oil UST was located in the exterior yard, south of Building K and on May 15, 2001 was removed. Contaminated soils were encountered in the excavation area and were removed and stockpiled on-site (PAP-00347921).

- A former gasoline UST was located south of Building K and west of the 1,000-gallon waste UST and was reportedly removed sometime in the early 1990s by New West. Following collection of the post-excavation soil samples, no lead was detected above the NJDEP Soil Cleanup Criteria and fill was therefore returned to the excavation (PAP-00347923-24).

- A single-wall steel UST was located in Building R and was reportedly installed by Westinghouse in 1951. Heating oil from the tank was pumped to the boiler through a pump room located west of Building H. Upon construction of Building R in 1967 the fuel pump system was moved into the basement of Building H and the overhead piping ran from the pump to the boiler room along the ceiling in the basement of Building H between February 18 and 25, 2002 the tank was removed in small sections. No evidence of contamination was observed (PAP-00347924-25; PAP-00347469).

The locations of USTs are provided on the map below (PAP-00348019).



4. Identified COCs

- PCBs (use, detected)
- PAHs (detected)
- Dieldrin (detected)
- DDx (detected)
- Copper (used, detected)
- Lead (possible use, detected)
- Mercury (detected)

PCBs

According to the Monsanto PCB Sales Summary, Westinghouse Newark, NJ purchased 24,000 pounds of Transformer Inerteen PPO in 1961, 2,696 pounds in 1962, and 735 pounds of Transformer Pyranol A13B3B in 1970 (PAP-00304328, 31). Note: As Westinghouse had multiple properties in Newark, it is not certain that the Newark, NJ address refers to the Orange street property. A Monsanto Material Safety Data Sheet for PCBs reported that Inerteen was a registered trademark of Westinghouse Electric Corporation and used as a dielectric fluid that may have contained varying amounts of PCBs as well as other components including chlorinated benzenes (PAP-00316328, 335). According to the February 25, 1976, *PCB in the United States Industrial Use and Environmental Distribution* by EPA, Inerteen was Westinghouse's trade name for a 60 percent PCB mixture and Pyranol was General Electric's trade name for a 70 percent mixture (PAP-00293934).

In an October 30, 1979 letter regarding the Newark R-I Division, Westinghouse noted "We have a number of oil filled transformers, none over 330 gallons each, but in total over 1,320 gallons, located in several vaults in the basement of our building" (PAS-00009808).

According to a December 13, 1983 Letter, all samples collected in the Plant Area showed less than 50 parts per million (ppm) PCBs and the EPA considered concentrations of less than 50 ppm as non PCB (PAS-00009693-97).

According to an Environmental Review of Westinghouse, conducted August 29-30, 1983, in connection with the closing and disposition of the plant, two unlabeled 55-gallon drums containing PCB capacitors were located near the A-1 area and were not in an approved PCB storage location (PAP-00347867). Test equipment in the Engineering Lab (C-3) contained 21 large PCB capacitors, which were to be removed in early December (PAP-00347868).

According to the April 30, 1992 *Report of Preliminary Interior Sampling*, PCB concentrations were detected in samples of concrete chips collected from the basement areas previously used for maintenance, printing and magnetic assembly and ranged from 0.66 mg/kg to 1.8 mg/kg. No PCBs were detected in the sample from the transformer room (PAP-00347638-40).

The 1998 PAR reported the following Transformers:

- Building E Transformer Vault – contained at least 17 pre-1929, oil filled transformers in the transformer room, adjacent to the boiler room. Oil staining was apparent on the floor next to Transformer A-2 and a floor drain was evident next to transformer B-2. According to a February 28, 1999 letter, Prestige Environmental, Inc. sampled the oil from the transformers in the Transformer Room at the Orange Street Property, and the sampling results showed that the oil from those transformers was non-PCB-containing. (PAP-00347695).

- Building D – Near the 20/20 instrument warehouse contained three small transformers with a 6" floor drain evident in this area. Photographs from the 1998 PAR depict intact transformers (PAP-00347601).

- Building D – In a closet, across from a former paint spray room, a transformer was located on the concrete floor, and a floor drain was evident below it. The unit was listed as 170 gallons, oil cooled. Photographs from the 1998 PAR depict intact transformers (PAP-00347602).

- Building D – Two wall mounted black transformers were located on the north wall, near the former printing area.

- Orange Street Transformer Vault – A transformer vault was identified under the sidewalk along Orange Street, adjacent to Building D. The type, number, and status of these transformers was not identified (PAP-00347571).

According to the 1998 *Preliminary Assessment Report,* the preliminary interior sampling and analysis by Paulus, Sokolowski and Sartor (PS&S) on April 30, 1992 detected 9.3 to 23 mg/kg PCBs in the oily material from the wooden flooring on the second floor of one of Westinghouse's former buildings (PAP-00347555).

According to the May 2002 *Interim RIR*, the following PCB concentrations were found on the Westinghouse Facility (PAP-00347980-8001,8014).

PCB Concentrations	
Location	**Max**
Waste UST (soil)	9.01 mg/kg
Boiler Pit (soil)	0.19 mg/kg
Loading Dock Areas (soil)	0.42 mg/kg
Trenches (soil)	0.7 mg/kg
Dry Wells (soil)	12 mg/kg
Incinerator Area (soil)	0.34 mg/kg
Core Samples (concrete floor)	1.9 mg/kg

According to the 2010 *Soil RIR*, PCBs were detected in AOC 13 between November and December 2008 at 2.6 mg/kg in sample I1A at 0.5 to 1 foot bgs, 270 mg/kg in sample I1B at 3 to 3.5 feet bgs and 47 mg/kg in sample I1C at 6 to 6.5 feet bgs. The PCB-contaminated soil was removed, along with the lead contaminated soil from AOC13 (PAP-00086846).

The 2010 *Soil RIR* also reported that soil with PCBs that exceeded RDC/NRDC SCC was identified in 2008 in AOC I3 Floor Drains and Piping and AOC I4 Floor Trenches. PCB concentrations ranged in concentrations of 0.5 mg/kg Aroclor-1254 in soil sample I12D collected between 9 and 9.5 feet bgs and 11 mg/kg Aroclor-1254 in soil sample I12A collected between 0.5 and 1 foot bgs. (PAP-00086879). Soil sample DWS2-4 for the Dry Well (AOC O3) collected in 2001 at 4 feet bgs also contained 12 mg/kg Aroclor-1260 (PAP-00086881). The areas with PCB concentrations above the RDC/NRDC SCC after excavation were to be addressed by engineering and institutional controls (PAP-00086855, 59).

PAHs

According to the May 2002 *Interim RIR*, the following PAH concentrations were found on the Westinghouse Facility (PAP-00347979-92, 8014-15).

PAH Concentrations		
PAH	**Max**	**Location**
Benzo(a)anthracene	2.4 mg/kg	Incinerator Area
Benzo(a)pyrene	6.7 mg/kg	Garage Area
Benzo(b)fluoranthene	2.2 mg/kg	Drywells
Benzo(k)fluoranthene	3.8 mg/kg	Incinerator Area
Dibenzo(a,h) anthracene	0.89 mg/kg	Incinerator Area
Indeno (1,2,3-cd) Pyrene	2.2 mg/kg	Incinerator Area

According to the March 2008 *Summary Report on Soil Investigation & Interim Remedial Actions*, PAH concentrations from borings collected 0-7.5 feet bgs in the paved yard soil (former residential dwellings) contained PAHs (PAP-00348399, 429). The maximum concentrations presented below are from one sample (Y-22) collected from 1-1.5 feet deep beneath the asphalt surface with all sampling in the following figure.

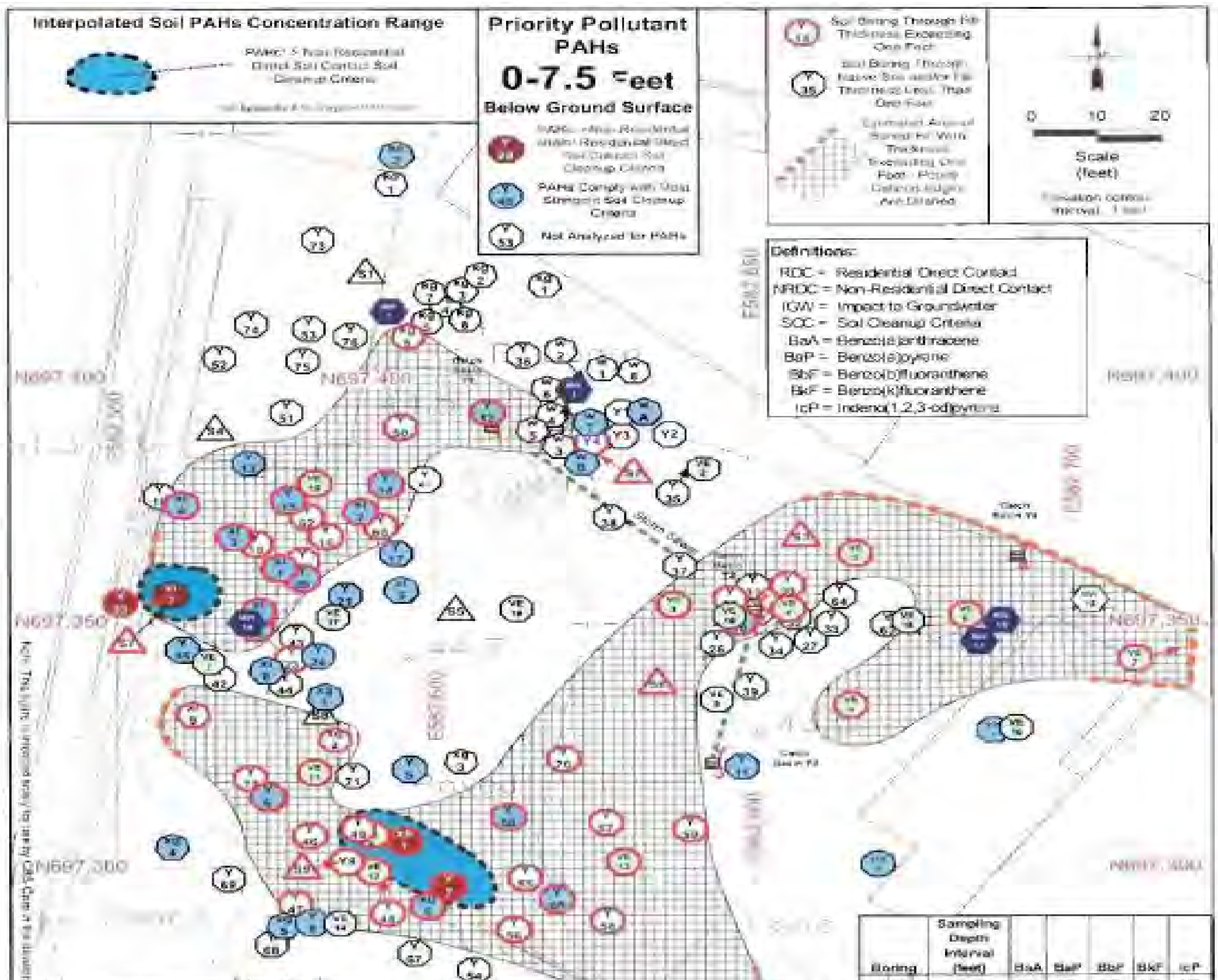
PAH Concentrations	
PAH	**Max**
Benzo(a)anthracene	8.8 mg/kg
Benzo(a)pyrene	12.3 mg/kg
Benzo(b)fluoranthene	22.0 mg/kg
Benzo(k)fluoranthene	8.4 mg/kg
Indeno (1,2,3-cd) Pyrene	4.2 mg/kg

CBS Corporation

Diamond Alkali OU2 Allocation

ADR Confidential

Facility Data Report



Boring	Sampling Depth Interval (feet)	BaA	BaP	BbF	BkF	IcP
	NRDC SCC	0.9	0.66	0.9	0.9	0.9
	RDC SCC	4.0	0.66	4.0	4.0	4.0
	IGW SCC	500	106	36	500	500
kn 02	1-1.5	ND	0.010	0.013	ND	0.011
rh 01	1-1.5	0.07	0.06	0.06	0.0	0.0
rh 02	2-2.5	ND	ND	ND	ND	ND
rh 03	1.5-2	0.04	0.04	0.05	0.03	0.03
rh 04	1.5-2	0.14	0.13	0.17	0.07	0.09
xg 01	1-1.5	0.1	0.1	[illegible]	0.0	0.0
xg 04	1-1.5	0.0	0.0	[illegible]	0.0	ND
x 05	1-1.5	0.3	ND	[illegible]	ND	ND
xg 06	1-1.5	0.1	0.1	[illegible]	0.05	0.0
x 01	1-1.5	1.2	1.1	1.2	0.9	0.6
x 02	1-1.5	0.2	0.2	0.3	[illegible]	0.1
x 03	1-1.5	0.3	0.3	0.6	0.3	0.1
x 04	1-1.5	0.0	0.1	[illegible]	0.05	0.1
x 05	1-1.5	0.0	0.0	0.01	ND	ND
x 06	3-3.5	0.0	0.0	0.02	0.01	0.0
x 07	1-1.5	2.4	6.7	13	3.8	2.2
x 08	1.5-2	ND	ND	ND	ND	ND
x 09	1-1.5	0.3	0.3	0.4	0.2	0.2
[illegible] 01	1-1.5	ND	ND	ND	ND	ND
[illegible] 02	1-1.5	ND	ND	ND	ND	ND
Y 05	1-1.5	ND	ND	ND	ND	ND
Y 05	3.5-4	ND	ND	ND	ND	ND
Y 05	6.5-7	ND	ND	ND	ND	ND

Boring	Sampling Depth Interval (feet)	BaA	BaP	BbF	BkF	IcP
Y 06	1-1.5	0.2	0.2	0.3	0.1	0.1
Y 06	3.5-4	ND	ND	ND	ND	ND
Y 07	1-1.5	2.0	2.1	2.5	1.8	1.3
Y 07 D	1-1.5	2.4	2.4	2.9	1.2	1.1
Y 07	3.5-4	ND	ND	ND	ND	ND
Y 07	6.5-7	ND	ND	ND	ND	ND
Y 08	1-1.5	0.1	0.0	0.1	0.0	ND
Y 08	3.5-4	ND	ND	ND	ND	ND
Y 09	1-1.5	0.5	0.5	0.7	0.3	0.3
Y 09	6.5-7	ND	ND	ND	ND	ND
Y 10	6.5-7	ND	ND	ND	ND	ND
Y 10 D	6.5-7	ND	ND	ND	ND	ND
Y 11	6.5-7	ND	ND	ND	ND	ND
Y 12	6.5-7	ND	ND	ND	ND	ND
Y 13	3.5-4	ND	ND	ND	ND	ND
Y 13	3.5-4	ND	ND	ND	ND	ND
Y 13	1-1.5	ND	ND	ND	ND	ND
Y 14	7-7.5	ND	ND	ND	ND	ND
Y 14	1-1.5	0.2	0.2	0.2	0.2	0.1
Y 14	3.5-4	ND	ND	ND	ND	ND
Y 15	1-1.5	0.3	0.3	0.3	0.2	0.2
Y 15	3.5-4	0.1	0.1	0.1	0.1	0.1
Y 15	6-6.5	ND	ND	ND	ND	ND
Y 17	1-1.5	ND	ND	ND	ND	ND
Y 17	3.5-4	ND	ND	ND	ND	ND
Y 17	6-6.5	ND	ND	ND	ND	ND

Boring	Sampling Depth Interval (feet)	BaA	BaP	BbF	BkF	IcP
Y 18	1-1.5	ND	ND	ND	ND	ND
Y 18	3-3.5	ND	ND	ND	ND	ND
Y 18	5.5-6	ND	ND	ND	ND	ND
Y 19	1-1.5	ND	ND	ND	ND	ND
Y 19	7-7.5	ND	ND	ND	ND	ND
Y 19	3-3.5	ND	ND	ND	ND	ND
Y 19	3-3.5	ND	ND	ND	ND	ND
Y 20	5-5.5	ND	ND	ND	ND	ND
Y 20	6.5-7	ND	ND	ND	ND	ND
Y 21	1-1.5	ND	ND	ND	ND	ND
Y 21	3.5-4	ND	ND	ND	ND	ND
Y 21 D	3.5-4	ND	ND	ND	ND	ND
Y 21	6-6.5	ND	ND	ND	ND	ND
Y 22	3.5-4	0.1	1.8	1.5	0.5	0.5
Y 22	6.5-7	ND	ND	ND	ND	ND
Y 22	1-1.5	8.8	12.3	22.8	8.4	4.2
Y 23	3.5-4	ND	ND	ND	ND	ND
Y 23	5-5.5	ND	ND	ND	ND	ND
Y 23	6.5-7	ND	ND	ND	ND	ND
Y 24	1-1.5	ND	ND	ND	ND	ND
Y 24	4-4.5	ND	ND	ND	ND	ND
Y 24	5.5-6	ND	ND	ND	ND	ND
Y 45	1-1.5	ND	0.03	0.05	ND	ND
Y 45 D	1-1.5	ND	0.04	0.07	0.04	ND
Y 45	3-3.5	ND	ND	ND	ND	ND
Y 65 D	3-3.5	0.09	0.06	0.16	0.04	ND
Y 66	3-3.5	0.12	0.07	0.17	0.08	ND
Y 66	5-5.5	ND	ND	ND	ND	ND
Y 68	3-3.5	0.06	0.05	0.14	0.05	ND
Y 68	5-5.5	ND	ND	ND	ND	ND

(PAP-00348429)

PAH exceedances identified in the 2010 *Soil RIR,* located in AOC A3 Loading Dock are provided in the following table (PAP-00086875).

Boring ID:	New Jersey	New Jersey	New Jersey	A4	A4
Sample ID:	Residential	Non-Residential	Impact to	A4	A4A
Sample Depth:	Direct Contact	Direct Contact	Ground Water	1'-1.5'	2.5'-3.0'
Sampling Date:	Soil Cleanup	Soil Cleanup	Soil Cleanup	11/5/2008	12/9/2008
Sampled by[a]:	Criteria	Criteria	Criteria	CRC	CRC
SEMIVOLATILE ORGANIC COMPOUNDS (mg/kg)[b]					
Benzo(a)anthracene	0.9	4	500	1.2	17
Chrysene	9	40	500	--[c]	16
Benzo(b)fluoranthene	0.9	4	50	0.98	8.7
Benzo(k)fluoranthene	0.9	4	500	1.1	12
Benzo(a)pyrene	0.66	0.66	100	1	12
Indeno(1,2,3-cd)pyrene	0.9	4	500	--	4.4
Dibenz(a,h)anthracene	0.66	0.66	100	--	2.1

Notes:
(a) "Sampled by" abbreviations are as follows:
CRC = Cummings/Riter Consultants, Inc.
(b) "mg/kg" is milligrams per kilogram, or parts per million.
(c) "--" indicates result is in compliance with soil cleanup criteria.

Sample BHTRS1 collected in 2001 at 2.5 feet bgs contained 2.7 mg/kg benzo(a)pyrene, 1.4 mg/kg Benzo(a)anthracene and 1 mg/kg Benzo(b)fluoranthene in AOC H2 Floor Trenches (PAP-00086878).

PAH exceedances identified in the 2010 Soil RIR located in AOC N4 Floor Drains are provided in the following table (PAP-00086880).

Boring ID:	New Jersey	New Jersey	New Jersey	N1	BNFDS1	BNFDS1	BNFDS1
Sample ID:	Residential	Non-Residential	Impact to	N1	BNFDSIA[c]	BNFDS1B (DUP)[d]	BNFDS1C
Sample Depth:	Direct Contact	Direct Contact	Groundwater	15.5'-16'	3'-3.5'	5.5'-6'	7.5'-8'
Sampling Date:	Soil Cleanup	Soil Cleanup	Soil Cleanup	12/11/2008	11/11/2008	12/12/2008	12/12/2008
Sampled by[a]:	Criteria	Criteria	Criteria	CRC	CRC	CRC	CRC
SEMIVOLATILE ORGANIC COMPOUNDS (mg/kg)[b]							
Benzo(a)anthracene	0.9	4	500	2.1	5.6	4.6	8.1
Benzo(b)fluoranthene	0.9	4	50	1.7	4.7	2.6	5
Benzo(k)fluoranthene	0.9	4	500	1.9	4.7	3.6	6.5
Benzo(a)pyrene	0.66	0.66	100	1.7	4.4	3.2	6
Indeno(1,2,3-cd)pyrene	0.9	4	500	--[e]	1.2	1.5	3
Dibenz(a,h)anthracene	0.66	0.66	100	--	--	--	1.1

Notes:
(a) "Sampled by" abbreviations are as follows:
CRC = Cummings/Riter Consultants, Inc.
(b) "mg/kg" is milligrams per kilogram or parts per million.
(c) Results are from a duplicate sample. Results from the original sample were in compliance with soil cleanup criteria.
(d) Duplicate sample collected at this location. The higher result of the original and duplicate sample is presented.
(e) "--" indicates result is in compliance with soil cleanup criteria.

One of 19 samples from AOC O3 contained soil with PAH exceeding SCC concentrations ranging between 0.94 mg/kg Dibenzo(a,h) anthracene in sample DWS2-4 collected in 2001 at 4 feet bgs and 8.9 mg/kg benzo(a)anthracene collected between 18 and 18.5 feet bgs in sample BODWS1A (PAP-00086881).

According to the 2010 *Soil RIR*, two of the 38 soil samples exceeded the NRDC SCC for select PAHs in AOC I3. PAH concentrations in these samples ranged from 0.86 mg/kg benzo(a)pyrene in sample I15B collected at 3 to 3.5 feet bgs to 0.96 benzo(k)fluoranthene in sample 12A, C, D collected at 0.5 to 1 feet bgs. NRDC SCC

exceedances in AOC I3 are proposed to be addressed by engineering and institutional controls (PAP-00086855). PAHs exceeding RDC and/or NRDCC SCC in sample BHTRS1 collected from the floor trenches (AOC H2) of Building H in 2001, were also proposed to be addressed by engineering and institutional controls (PAP-00086854).

Dieldrin

According to the 2002 *Interim Remedial Investigation Report (RIR)*, soil samples taken next to floor drains and trenches contained maximum concentrations of 0.034 mg/kg aldrin (BEFDS1 collected from 3.5 in bgs on July 11, 2001), and 0.036 mg/kg dieldrin (BHTRS1 collected from 2.5 in bgs on July 10, 2001) (PAP-00347986-88).

According to the 2010 *Soil Remedial Investigation Report (RIR),* dieldrin was not detected in soil beneath Buildings D, J, K, M, R and T based on the 2001 sampling (PAP-00086927).

The 2001 sampling showed two detection instances of dieldrin occurred during dual column analysis when the percent difference between the quantitated concentrations on the two columns were greater than 40%: at Building I in sample BITRS2 collected on October 9, 2001 from 2.5 feet below ground surface (bgs) contained 0.011 mg/kg and Building O in dry well sample DWS4-6 collected on June 13, 2001 from 6 ft bgs containing 0.023 mg/kg (PAP-00086971; PAP-00087019).

DDx

According to the 2002 *Interim RIR*, soil sample BEBPS1 collected on July 11, 2001 from adjacent to one of the boilers located in Building E contained 0.0093 mg/kg 4-4'-DDE and 0.001 mg/kg 4,4'-DDT (PAP-00347983). The analytical results indicated that all detected parameters were below the applicable NJDEP Soil Cleanup Criteria. On October 8, 2001, a second boring (BITRS2) was advanced in the trench to the water table and contained a maximum concentration of 0.15 mg/kg 4, 4'-DDE, 0.22 mg/kg 4, 4'-DDT (difference between dual column analyses was greater than 40%) in sample BITRS2 collected from 18 inches bgs on October 9, 2001 (PAP-00347987). Soil sample BOFDS1B collected on October 9, 2001 from 8 inches bgs contained 0.034 mg/kg 4,4' DDE, 0.0098 mg/kg 4,4'-DDD (difference between dual column analyses was greater than 40%), and 0.012 mg/kg 4,4'- DDT (difference between dual column analyses was greater than 40%) (PAP-00347988). Drywells contained max concentrations of 0.8 mg/kg (difference between dual column analyses was greater than 40%) 4, 4'-DDD, 0.043 mg/kg 4, 4'-DDT (difference between dual column analyses was greater than 40%) and 0.24 mg/kg 4,4'-DDE (PAP-00347989).

According to the 2010 Soil RIR, 0.046 mg/kg 4, 4'-DDT was detected in soil sample BDFDS1 collected 1.5 feet bgs from Building D in 2001 (PAP-00086927). Concentrations of DDT were below RDC/NRDC SCC in Buildings D, E, H, I, J, K, M, O and R (generally non-detect), building N was not analyzed (PAP-00086971-77, 84, 94; PAP-00087016-19, 33). Please see map at the end of this section for sampling locations.

Copper

According to a 1981, Selected Substance Report Westinghouse brought in 163,500 lbs. per year of copper of which 82,788 was shipped off site as (or in) product. The estimated maximum inventory in 1981 was 211,328 lbs. (PAP-00425588).

According to the March 1998 *PAR,* copper cyanide was used in the Electroplating Area of Building I on the first floor from 1960 through 1983 (PAP-00347554).

According to the 1998 *PAR,* the preliminary interior sampling and analysis by Paulus, Sokolowski and Sartor (PS&S) on April 30, 1992 detected 20,300 mg/kg of copper in a residual material sample from the plating room. Sampling of the oily material from the wooden flooring on the second floor contained elevated levels of copper (29,100 mg/kg) (PAP-00347555).

According to the May 2002 *Interim RIR*, the following copper concentrations were found on the former Westinghouse Facility (PAP-00347979-92, 996-8001, 8014-15, 8020).

Copper Concentrations	
Location	**Max**
TCE Tank Area (soil)	86 mg/kg
Waste UST (soil)	40.7 mg/kg
Boiler Pit (soil)	103 mg/kg
Loading Dock Areas (soil)	42.3 mg/kg
Drum and Waste Storage Areas (soil)	35.2 mg/kg
Trenches (soil)	843 mg/kg
Drywells (soil)	5,050 mg/kg
Incinerator Area (soil)	1,210 mg/kg
Garage Area (soil)	268 mg/kg
Core Samples (concrete floor)	6.040 mg/kg

According to the March 2008 *Summary Report on Soil Investigation & Interim Remedial Actions*, copper concentrations from borings collected 0-10 feet below ground surface near the former incinerator ranged from 11.1 mg/kg-2,330 mg/kg (PAP-00348398, 427).

AOC T8 Former Garage contained copper that ranged between 1,270 mg/kg in soil sample Y-14 collected between 1.0 and 1.5 feet bgs in Historic Fill and 2,330 mg/kg in soil sample Y-23 collected between 5 and 5.5 feet bgs (PAP-00086887).

The 2010 *Soil RIR* noted that copper concentrations in soil exceeding RDC/NRDCC SCC in Building I (AOC I3 and I4 – floor drains, piping and trenches) and AOC T8 (Former Garage) are to be proposed to be addressed with engineering and institutional controls (PAP-00086855-56, 63).

According to a 1972 Waste Effluent Survey, copper was not detected in Westinghouse industrial waste effluent (detection limit of <0.1 mg/L) (PAS-00009662). A 1981 Sewer Application contained an analysis of industrial waste showing it contained 1.05 mg/L copper (PAS-00009872).

Lead

According to an Environmental Review of Westinghouse conducted August 29-30, 1983, “Paints used in these systems (water paint booths N-1 and R-1) included a variety of lacquers and enamels with some possibly containing lead and/or chrome” (PAP-00347867). Additional documents confirming lead-based lacquers and enamels were not identified in the available file material.

According to the 1998 *PAR,* the preliminary interior sampling and analysis by Paulus, Sokolowski and Sartor (PS&S) on April 30, 1992 detected 4,140 mg/kg of lead (B-3) in a residual material sample from the plating room (Building I). The oily material from the wooden flooring on the second floor (Building F) in areas formerly containing machining, milling and drilling also contained elevated levels of lead (4,800 mg/kg) (PAP-00347555).

According to the May 2002 *Interim RIR*, the following lead concentrations were found on the former Westinghouse Facility (PAP-00347979-92, 996-8006).

Lead Concentrations	
Location	**Max**
TCE Tank Area (soil)	96.6 mg/kg
Waste UST (soil)	97.1 mg/kg
Former Gasoline UST (soil)	69.5 mg/kg
Boiler Pit (soil)	62.9 mg/kg
Loading Dock Areas (soil)	386 mg/kg
Drum and Waste Storage Areas (soil)	45.8 mg/kg
Next to a Floor Drain (soil)	4,030 mg/kg
Drywells (soil)	2,440 mg/kg
Incinerator Area (soil)	1,290 mg/kg
Garage Area (soil)	222 mg/kg
Core Samples (concrete floor)	15.8 mg/kg
Basement (TCLP)	17.3 mg/L
First Floor (TCLP)	33 mg/L
Second Floor (TCLP)	4 mg/L

According to the March 2008 *Summary Report on Soil Investigation & Interim Remedial Actions*, lead concentrations from borings collected 0-10 feet below ground surface near the former incinerator ranged from ND to 11,400 mg/kg in soil sample Y-23 collected between 3.5 and 4 feet bgs from Historic Fill in AOC T8 (Former Garage) (PAP-00348398, 427; PAP-00086887).

According to the 2010 *Soil RIR*, between November and - December 2008, lead was identified in AOC D2 at a maximum level of 8,280 mg/kg in sample D6A collected between 1 and 1.5 feet bgs. Thirty cubic yards of contaminated soil were excavated from the AOC to a depth of 3.5 feet bgs. AOC I3 contained 502 mg/kg lead in sample I1C that warranted excavation of 35 cubic yards of soil to a depth of 8 feet bgs. In addition, 609 mg/kg lead in sample R1A was identified in AOC R2. High TCE concentrations in this area also warranted the excavation of 50 cubic yards of contaminated soil to a depth of 11 feet bgs (PAP-00086846).

According to the 2010 *Soil RIR*, post-excavation sampling identified remaining lead concentrations in soil ranged between 1.3 mg/kg in AOC I3 collected between 6 and 6.5 feet bgs in sample PE-I1-ESW and 336 mg/kg in AOC D2 in sample PE-D6-SSW collected between 2.5 and 3 feet bgs (PAP-00086874).

AOC D2 Floor Drains/Trenches contained lead at 637 mg/kg in sample D7A collected between 1 and 1.5 feet bgs and 874 mg/kg in sample D8A collected at the same level (PAP-00086876). Both samples originated from materials identified as Historic Fill (PAP-00086849).

AOC E2 Floor Drains/Trenches, contained lead above the RDC SCC at a concentration of 1,380 mg/kg in sample E2B collected between 3.5 and 4 feet bgs on November 6, 2008 (PAP-00086877). Lead (609 mg/kg) was found in sample I2B between 3.0 and 3.5 feet bgs at AOC I3 (PAP-00086879). As noted in the table above, 2,440 mg/kg lead was found in soil sample DWS2-4 collected 4 feet bgs in AOC O3 (PAP-00086881).

AOC T7 Incinerator soil contained 404 mg/kg in soil sample EXICS2 collected from materials identified as Historic Fill at 1 foot bgs. As noted in the table above1,290 mg/kg lead was found in soil sample EXICS6 from materials identified as Historic Fill collected at 3 feet bgs (PAP-00086886).

According to the 2010 *Soil RIR*, AOC D2 (floor drains and trenches), AOC E2 (floor drains/trenches), and AOC I3 (floor drains and piping) containing lead concentrations that exceeded RDC/NRDC SCC (D7A and D8A) were proposed to be addressed with engineering and institutional controls (PAP-00086852-53, 55).

According to a 1972 Waste Effluent Survey, Westinghouse's industrial waste effluent was non-detect for lead, with a detection limit of < 0.3 mg/L (PAS-00009662), and the facility sent 121,404,436 gallons of water/year to the sanitary sewer (PAS-00009661). A 1981 Sewer Application contained an analysis of industrial waste effluent showing it contained 1.18 mg/L lead (PAS-00009872).

Mercury

According to the May 2002 *Interim RIR*, the following mercury concentrations were found at the former Westinghouse Facility (PAP-00347979-92, 999-8006).

Mercury Concentrations	
Location	**Maximum Concentration**
TCE Tank Area (soil)	0.25 mg/kg
Waste UST (soil)	0.808 mg/kg
Boiler Pit (soil)	0.05 mg/kg
Loading Dock Areas (soil)	0.74 mg/kg
Drum and Waste Storage Areas (soil)	0.14 mg/kg
Next to a Floor Drain (soil)	32.9 mg/kg
Drywells (soil)	2.4 mg/kg
Incinerator Area (soil)	4.7 mg/kg
Garage Area (soil)	1.4 mg/kg
Core Samples (concrete floor)	10 mg/kg
Basement (TCLP)	0.006 mg/kg
First Floor (TCLP)	0.004 mg/kg
Second Floor (TCLP)	0.005 mg/kg

According to the 2010 *Soil RIR*, between November and December 2008, sampling found a maximum level of mercury on-site in AOC D2 of 25.4 mg/kg in sample D6A. The contamination was excavated during the removal of lead at AOC D2 (PAP-00086846).

Post-excavation samples collected only from AOC D2 identified remaining mercury concentrations that ranged between 3.5 mg/kg in sample PE-D6-Bott collected between 2.5 and 3.5 feet bgs and 41.6 mg/kg in sample PE-D6-SSW collected between 2.5 and 3 feet bgs (PAP-00086876). AOC D2 Floor Drains/Trenches contained mercury that ranged between 20.2 mg/kg in sample D8A at 1 to 1.5 feet bgs in material identified as Historic Fill and 41.6 mg/kg in sample PE-D6-SSW in a post-excavation sample collected at 2.5 and 3 feet bgs (PAP-00086876).

According to the 2010 *Soil RIR*, AOC D2, floor drains and trenches, containing mercury exceeding RDC/NRDC SCC were proposed to be addressed with engineering and institutional controls (PAP-00086852).

According to a 1972 Waste Effluent Survey, Westinghouse industrial waste contained 0.0007 mg/L mercury (PAS-00009662).

According to an August 5, 1981 Letter, PVSC requested that Westinghouse conduct a 3 month monitoring program from April 27, 1981 – July 24, 1981 for mercury for each discharge point (4). Results from the report are below (PAP-00425594-8).

Discharge Monitoring Report				
Discharge	05/27/1981	06/18/1981	07/14/1981	Volume Discharged (Gallons)
1	.0009	.0006	<.0005	5,638,000
2	.0008	.0014	.0048	805,000
3	.0019	.0008	<.0005	1,381,000
4	.0008	.0006	<.0005	3,682,000

(PAP-00086896)

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PAHs, copper, lead and mercury detected at the site in soil soils are presented in the table below.

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	11,400 mg/kg
Copper	5,050 mg/kg
Mercury	41.6 mg/kg
Benzo(a)anthracene	8.8 mg/kg
Benzo(a)pyrene	12.3 mg/kg
Benzo(b)fluoranthene	22 mg/kg
Benzo(k)fluoranthene	8.4 mg/kg
Dibenzo(a,h)anthracene	0.89 mg/kg
Indeno(1,2,3-cd)pyrene	4.2 mg/kg
PCBs	270 mg/kg

According to the April 2016 *Groundwater Remedial Investigation Report*, approximately 95 percent of the site was covered by concrete slabs and asphalt pavement (PAP-00348813).

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

According to the 2010 *Soil RIR*, Historic Fill exists at the site and consisted of pieces of bricks and/or concrete block and wood fragments, along with cinders, slag, sand and coal in soil. Historic Fill thickness ranged between less than one-foot to approximately eight feet. It was noted in AOCs C, D, E, H, I, N, O, R and T. Samples of fill contained exceedances of SCC for metals and PAHs that were unrelated to site operations (PAP-00086848-49).

In early August 2019, NJDEP requested that the proposed Historic Fill CEA boundaries be “pulled back” to match site/property boundaries. CBS submitted a revised Historic Fill CEA to NJDEP. By letter dated September 6, 2019, NJDEP established a CEA/Well Restriction Area (CEA/WRA) for contamination in groundwater associated with the Historic Fill at the facility (PAP-00425522).

5. COC Pathways

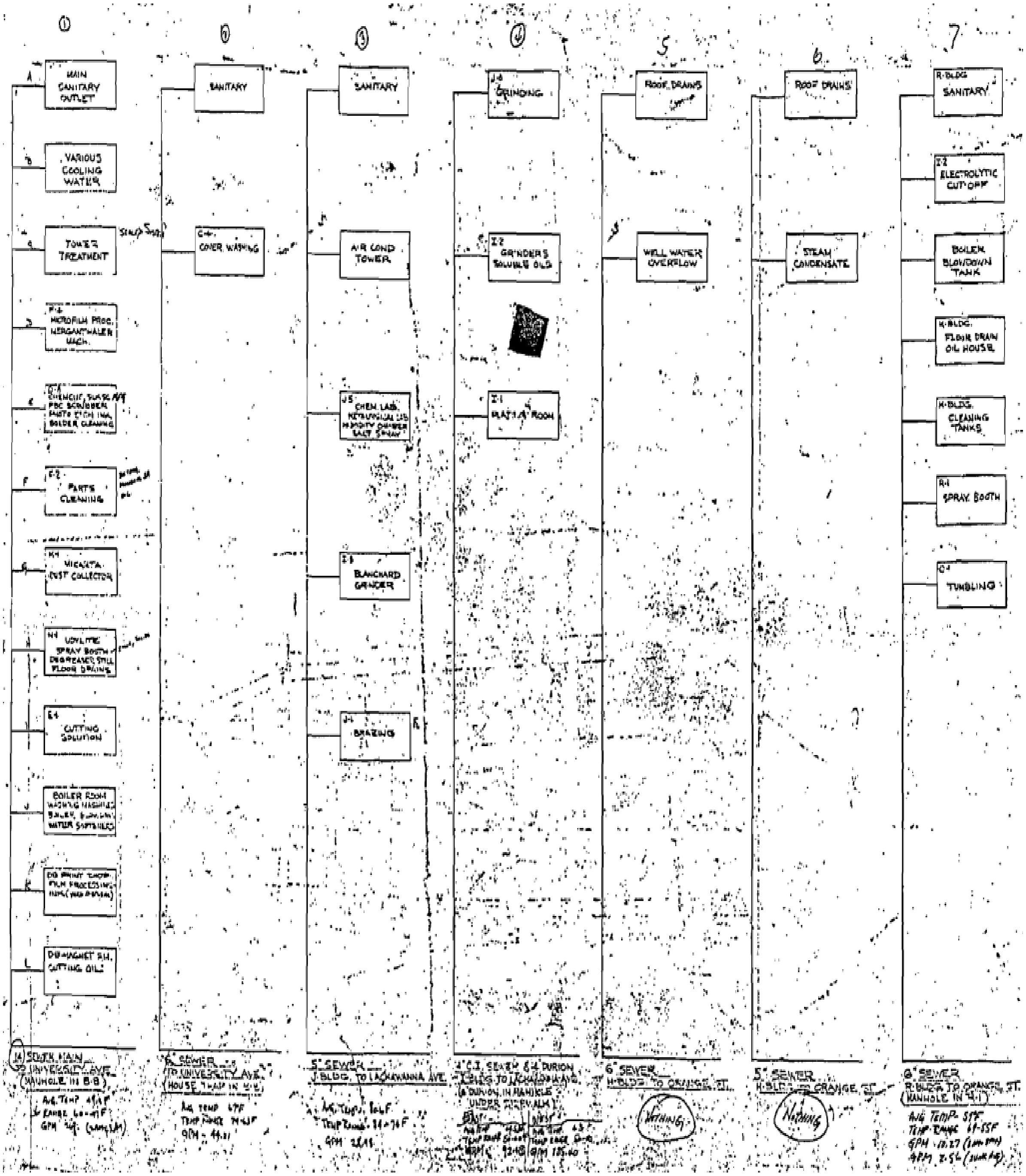
Combined Sanitary and Storm Sewer

According to a March 1998 *PAR*, the facility had a combined sanitary and storm sewer system which discharged to the PVSC. The buildings have been connected to the city sewer system since they were constructed (PAP-00347566).

The Westinghouse Sewer Discharges diagram below shows 7 discharge locations and shows sanitary, various cooling water, tower treatment, microfilm production, scrubber, parts cleaning, dust collectors, spray booths, degreasers, cutting solution, boiler room washing, print and cutting oil discharged to the main University Ave sewer via manhole in Building B with a flow of 269 GPM. Sanitary and cover washing waste was discharged to University Avenue through a 6-inch sewer with a flow of 44.21 GPM (PAP-00347682).

The Westinghouse Sewer Discharges diagram below also shows that sanitary, air condition tower, chemistry lab, and the blanchard grinder discharged to a 5-inch sewer on Lackawanna Avenue with a flow of 22.98 GPM. Grinding, grinder soluble oils and the plating room discharged to Lackawanna Ave with a flow of 92.48 GPM to the east and 185.40 GPM to the west (PAP-00347682).

The Westinghouse Sewer Discharges diagram below shows roof drains, well water overflow and steam condensate discharged to a 5-inch and 6-inch sewer to Orange Street. Note that flow rates were not provided in the diagram. Sanitary, electrolytic cut off, boiler blowdown tank, floor drain oil house, building cleaning tanks, spray booth, tumbling all discharged to the Orange Street sewer through a 6-inch sewer with a flow of 2.56 - 10.27 GPM (PAP-00347682).



(PAP-00347682).

Westinghouse's Waste Effluent Surveys, PVSC applications and Industrial Water Use Census document the following water usage (PAS-00009661, 861, 868; PAP-00347468).

Westinghouse Water Usage in gallons			
Reporting Year	**Sanitary Water**	**Well**	**Total Water Use**
1964	234,500,000	N/A	395,000,000
1971	121,404,436	91,400,000	213,804,436
1974	91,638,000	91,400,000	183,538,000
1980	38,528,732	52,128,000	90,656,732

According to a 1972 Waste Effluent Survey, the industrial waste effluent was non-detect for copper and lead (detection limits of 0.1 mg/L for copper and 0.3 mg/L for lead. The industrial waste effluent contained 0.0007 mg/L mercury (PAS-00009662).

According to the 1981 PVSC Sewer Connection Application, industrial waste effluent contained 1.05 mg/L copper, 1.18 mg/L lead and 0.001 mg/L mercury (PAS-00009872). According to a 1981, Selected Substance Report, Westinghouse discharged an estimated 0.252 million gallons per day to the PVSC POTW containing process water and domestic sewage with 1,548 lbs. per year of copper total discharge to the POTW (PAP-00425584, 588).

A 1971 Westinghouse Environmental Control Survey listed sources of water discharged to the sewer system as process, cooling, and sanitary operations. Cooling water was recycled, with 32,300 gallons per week of blowdown discharged to the sewer system. Water from air pollution control devices was discharged at a rate of 1,000 gallons per day. There was no treatment of wastewater prior to discharge to the sewer system until 1983. In 1983, pH adjustment was added to plating effluent (PAS-00009765-72).

A 1978 Elson T. Killam Heavy Metal Study reported a flow of 0.252 MGD and reported concentrations of copper (6.452 lbs/day / 3.07 mg/L), lead (0.132 lbs/day / 0.063 mg/L) and mercury (0.0008 lbs/day / 0 mg/L) (PAP-00348950).

Westinghouse held PVSC permit 20402052 in 1982 and was authorized to discharge from outlets 20402051-41900-0201 and 20402052-41900-0201 (PAS-00009884, 8, 9).

A 1982 letter reported that effluent sampling occurred at four principal discharges to the City system. Discharge No. 1 was to a city sewer on University Blvd; the second discharge was to a city sewer on Orange Street; and the remaining two connections discharged to a city sewer on Lackawanna Avenue (PAS-00009898).

According to a letter from CBS Corporation to EPA written in 2017, the site does not sit directly on the Passaic River, but is one-third of a mile from its banks near River Mile 5.7. The letter states that the plant was serviced by PVSC in the vicinity of the Clay Street CSO District. Sanitary, process and storm water flowed into PVSC for treatment and conveyance outside of the Passaic River (PAP-00088242).

Direct Discharge

There is no information regarding direct discharges in the available file material.

Spills

According to the March 1998 *PAR*, Technology Standards Associates (TSA) inspected the facility on July 17, 1996, August 13, 1996 and August 15, 1996 (12 years after Westinghouse operated) and reported staining on a concrete floor that lead to a floor drain nearby in one of Westinghouse's buildings. Another floor drain in the plating area had an oil-type staining on the concrete surrounding it (PAP-00347567). Oil staining and an actual puddle of oil was apparent on the concrete floor next to Transformer A2. Oil staining was also evident on the floor near the rear of the transformer room (PAP-00347568).

There is no information regarding spills during Westinghouse's tenure in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

According to the March 1998 *PAR*, Technology Standards Associates (TSA) inspected the facility on July 17, 1996, August 13, 1996 and August 15, 1996 (12 years after Westinghouse operated) noting many areas in the building are not used and were not lit very well, in particular the boiler room and finishing room, possibly hindering a complete inspection of the facility (PAP-00347560). The following inspection information was reported.

The Plating Room appeared to have antique restoration work performed in this area. Gloves, a 55-gallon drum of caustic soda, and a hose were apparent, along with staining on the concrete floor leading to a floor drain nearby. Another 55-gallon drum (unlabeled) and a hose on top of a floor drain were also observed in this room. The inspection of the I-1 Plating area revealed an area in the concrete floor, adjacent to Lackawanna Avenue, which was corroded. A white, granular material (similar to a salt) surrounded another floor drain nearby. Observation of a floor drain covered with a metal can revealed corroded lines under the floor. Another floor drain in the plating area had an oil-type staining on the concrete surrounding it (PAP-00347567).

The Finishing Room / Tumbling Trench inspection reported a large trichloroethylene degreaser located near the trench. Tumbling wastewaters generally contain metals, degreasing agents, and cleaners. The trench discharged to the sewer system (PAP-00347567).

Inspection of the Transformer Areas showed an eight-inch floor drain in the concrete floor adjacent to Transformer B2, in the transformer vault, Building E. Oil staining and an actual puddle of oil was apparent on the concrete floor next to Transformer A2. Oil staining was also evident on the floor near the rear of the transformer room. A six-inch floor drain was also observed in a transformer room in the basement of Building D. The room contained three transformers, and was located near the former 20/20 Instrument Room. Another floor drain was also observed under a transformer, located in a small room in the basement of Building D (PAP-00347568).

The engine room contained a series of trenches surrounding the main equipment in the room. At one time, Westinghouse generated its own energy. A 55-gallon drum of boiler treatment chemical was stored on top of, and leaking into a trench in the engine room. Miscellaneous oils in 55-gallon drums were also stored above the trenches. A leaking oil pump was observed on top of a trench in front of the active boiler in the engine room. Oil staining was also observed on the concrete floor in front of one of the inactive boilers (PAP-00347568).

During the inspection of Building R, a hose appeared to be used near a floor drain in Building R, where paint (mostly latex) was being stored. A floor drain filled with debris was also observed under a truck inside Building R (PAP-00347569).

Violations

There is no information regarding violations pertaining to the allocation COCs in the available file material.

Permits

A 1981 Generator Annual Hazardous Waste Report noted Westinghouse had a Generator's EPA ID Number of FNJD004383485 (PAS-00009834).

In 1981, Westinghouse applied for a PVSC Sewer Connection for discharge to the sanitary or combined sewer (PAS-00009867). By January 1982, PVSC granted Westinghouse a Sewer Connection Permit 20402052 with a requirement to report effluent measurements quarterly and daily sampling of Outlets Nos. 4 and 5 (PAS-00009884; 88-90).

In August 1982, Westinghouse applied for the first time for two Air Permits to Construct, Install or Alter Control Apparatus or Equipment and Certificates to Operate Control Apparatus or Equipment for two existing operational stacks (PAS-00009721-25).

7. Response Actions

Characterization Activities

According to the Groundwater Remedial Action Work Plan, the following characterization activities have taken place at the facility (PAP-00392898):

- Preliminary Assessment Report (PAR) (1998) (PAS-00347529
- Interim Remedial Investigation Report (2002) (PAP-00347906)
- Additional Site Investigation (2002)
- Remedial Investigation Report (2003) (PAP-00348116)
- Remedial Investigation Work Plan (2003)
- Remedial Action Work Plan for TCE in Paved Yard (2005)
- Remedial Investigation and Interim Remediation Status Summary (2005)
- Summary Report on Soil Investigation and Interim Remedial Actions (2008) (PAP-00348381)

- Soil Remedial Investigation Report (2010) (PAP-00086822)
- Soil Remediation Action Work Plan (2011) (PAP-00087890)
- Groundwater Remedial Investigation Report (2016) (PAP-00348805)
- Groundwater Remedial Action Work Plan (2019) (PAP-00392887)

Soil

According to the 2002 *Interim RIR,* USTs were removed and stored on-site for further evaluation. Residual product from each tank was collected separately in 55-gallon drums and stored on-site for evaluation and disposal. Similarly, contaminated soil was stockpiled on-site (PAP-00348122). Soil borings and installation of monitoring wells were conducted at areas of concern (concentrations are in respective COC section above) (PAP-00348122).

According to the March 2008 *Summary Report on Soil Investigation & Interim Remedial Actions*, soil investigations for the south of Building H and the Paved Yard included delineating the horizontal and vertical extent of soil contaminants detected above NJDEP Soil Cleanup Criteria (SCC) at accessible exterior areas of the property, improve horizontal and vertical delineation of metals, PAH, and PCBs that had been detected during previous sampling and investigate soil quality at potential points of environmental concern which had not been previously sampled (PAP-00348389). Concentrations of COCs are provided in the Section 4.

According to the 2011 *Soil Remediation Action Work Plan*, soil investigation and remedial action activities in this workplan focused on characterization, delineation and removal of contamination at the site (PAP-00087896). The workplan divided the site into AOCs designated by buildings (PAP-00087903-04).

According to the 2010 *Soil RIR,* CBS began investigation and remediation of the site under a Memorandum of Agreement (MOA) for Non-Residential properties effective March 21, 2003. The document delineated the extent of contaminants in the soil, identified COC pathways, and evaluated remedial action alternatives. CBS completed the soil remedial investigation within the NJDEP Voluntary Cleanup Program (PAP-00086829). The property is restricted to non-residential use with a Deed Notice (PAP-00086830). 500 samples collected from 175 soil borings between 2001 and 2009 showed that contamination was limited to the site property boundary. Exceedances of RDC SCC and NRDC SCC were proposed to be addressed with engineering and institutional controls for the entire site. PAHs and metals in soils were attributed to Historic Fill found throughout most of the site (PAP-00086831). A cover (i.e., building foundation, asphalt, soil, or other applicable material) would be placed over the site to promote the protection of public health and safety (PAP-00086832). VOCs were addressed with a two-phase vacuum extraction system installed and operated from June 2, 2005 – October 31, 2005 (PAP-00086843). A total of 171 tons of excavated material was disposed at an off-site disposal facility (PAP-00086847). The transformers located in AOCs D2 and E1 received approval for no further action in September 2003 (PAP-00086852-53). The property owner agreed to address contamination above RDC SCC with an institutional control (deed restriction) and areas that exceeded NRDC SCC with engineering controls. It was expected that engineering controls would encompass the

entire property with the future building constructed to qualify as the engineering control (PAP-00086867).

Remedial Activities

The AOCs with NFA's are summarized below.

AOC	FINDINGS	NFA REFERENCE
A1 – Organic Finishing Room and Floor Drains/Trenches	Floors intact; no floor drains or trenches present.	NFA approved on October 30, 2003 (PAP-00086851).
B1 – Floor Drains/Trenches	Floors intact; no floor drains/trenches present; soil in compliance with applicable SCC.	NFA approved on October 30, 2003 (PAP-00086851).
C1 – Floor Drains/Trenches	Floors intact; no trenches present.	NFA approved on October 30, 2003 (PAP-00086851).
D1 – Transformers, Paint Booth, and Battery Storage	Floors intact.	NFA approved on September 4, 2003 (PAP-00086852).
D3 – Elevator Shafts	Soil samples confirm compliance.	NFA approved on September 28, 2010.
E1 – Transformers	Floors intact.	NFA approved on September 4, 2003 (PAP-00086853).
H1 – Battery and Hazardous Material Storage	Floors intact; no floor drains present.	NFA approved on October 30, 2003 (PAP-00086854).
I1 – Possible UST	No tank found following geophysical survey.	NFA approved on October 30, 2003 (PAP-00086855).
I2 – Plating and Finishing Area	Floors intact.	NFA approved on October 30, 2003 (PAP-00086855).
J1 – Floor Drains and Piping and J2-Elevator Shaft	Soil in compliance with SCC; integrity of elevator shaft is questionable.	NFA approved on October 30, 2003 (PAS-00086856).
K1 – Hazardous Material Storage K2 – Floor Drains &Piping	Floors intact; soils in compliance with SCC.	NFA approved on October 30, 2003 (PAP-00086856).
M1 – Floor Drains and Piping	Soil in compliance with SCC.	NFA approved on October 30, 2003 (PAP-00086857).
N3 – Hazardous Material Storage	Floors intact.	NFA approved on October 30, 2003 (PAP-00086858).
O2 – Finishing/Tumbling Room Trench	Trench bottom intact.	NFA approved on October 30, 2003 (PAP-00086859).
O4 – Hazardous Material Storage	Floors intact.	NFA approved on October 30, 2003 (PAP-00086859).
T4 – Former Gasoline UST through T6 – Loading Dock West of the R-Building	Tank removed in 1990s; soil samples in compliance with SCC.	NFA approved on September 4, 2003 (PAP-00086862).

8. Summary of Asserted Defenses

To the extent it is determined that a gasoline or oil release occurred at the Facility during the Relevant Time Period and impacted the Passaic River with COC(s), CBS will assert the CERCLA petroleum exclusion (42 U.S.C. §9601(14)).

Facility Data Report

CELANESE CORPORATION OF AMERICA (CNA HOLDINGS, LLC)

Facility Name, Address and Size: Celanese Corporation of America, Ancillary Facility, 226 Rome Street, Newark, New Jersey (the "Ancilary Facility"). According to a 1950 map, the Ancillary Facility consisted of Blocks 2052, 2059, 2060, and 2061 (PAP-00111380). Note: At some point in time the blocks were consolidated into Block 2052, Lot 1. No information on the number of employees and shifts was available in files reviewed.

1. **Business Type:** The Ancillary Facility, was the support facility for the Main Plant at which various operations were conducted, including material storage, equipment maintenance and power supply (PAP-00106193).

2. **Time Period of Ownership/Operations**

   Operator: 1920s to 1957
   Owner: 1920s to 1962

1941: According to the 2017 Pre-Litigation Settlement of Civil Litigation between the City of Newark and CNA (successor to HNA Holdings Inc., f/k/a Hoechst Celanese Corporation) (2017 Pre-Litigation Settlement), in the early 1900s Celluloid Corporation owned most if not all of Block 2052, Lot 1. In March 1941, the Celluloid Corporation merged with Celanese Corporation of America (PAP-00110788).

1952: On May 13, 1952, Celanese Corporation of America conveyed to Atlantic-Roseville Corporation property that begins at the intersection of St. George Street and Rome Street, formerly Berlin Street. The deed did not give block or lot numbers, just metes and bounds (PAP-00111300-301).

1953: On April 6, 1953, Atlantic-Roseville Corporation conveyed the same property back to Celanese Corporation of America (PAP-00111298-299).

1957: On May 14, 1957, Celanese Corporation of America conveyed to Rome-Charles Corporation a tract of land that began at the intersection of St. Charles Street and Rome Street (PAP-00111334-335). The deed did not give block or lot numbers, just metes and bounds, but this appears to be the Lindol Plant. Note: The deed pertaining to this conveyance was not located during the review of the available file material. This information was obtained from the 1962 deed noted below.

1962: On December 20, 1962, Celanese Corporation of America conveyed to Continental Bulk Systems, Inc., property that was encompassed by St. George Street, Rome Street, and McGregor Street with the exception of the land previously conveyed to Rome-Charles Company in 1957 (PAP-00111334-335). The deed did not give block or lot numbers, just metes and bounds and was in poor quality so no details were ascertained from the deed.

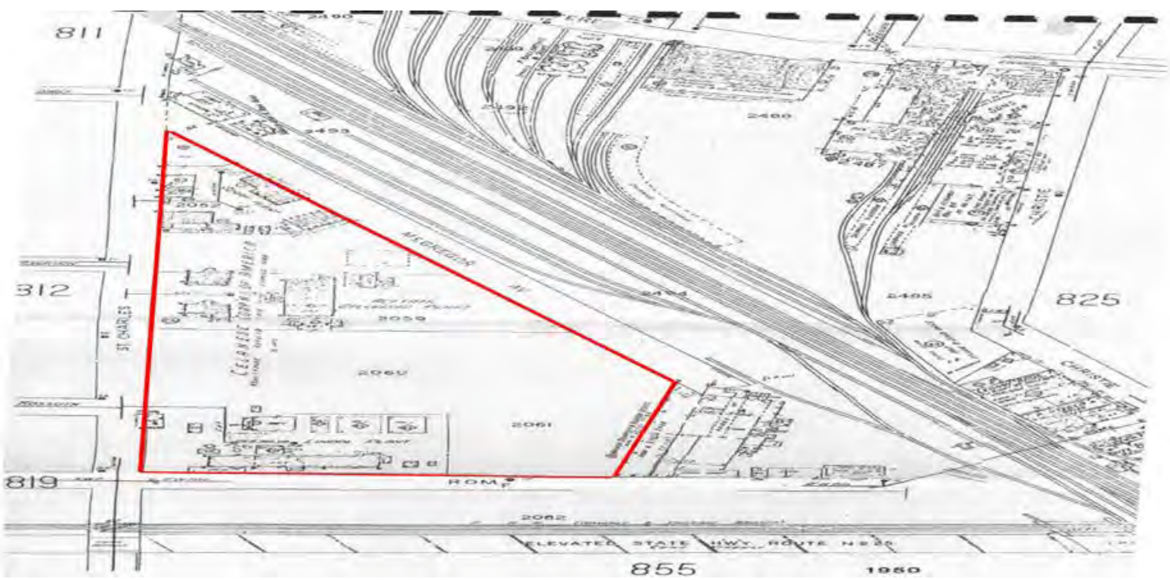
1966: On May 2, 1966, Charter Bulk Service, Inc., formerly Continental Bulk Services, Inc. sold the property they purchased from Celanese Corporation of America to the City of Newark. The deed states that the property was known as Block 2052, Lot 1 (PAP-00111292-93). In addition, in 1966 the company changed its name to Celanese Corporation (PAP-00110788).

According to the 2017 Pre-Litigation Settlement, once Block 2052, Lot 1 was conveyed to the City of Newark in the 1960s, the City began construction of the Ironbound Recreation Center which entailed the Ironbound Pool, Skating Rink, Ironbound Bleachers, Ironbound Aquatic Center, and the Newark Ironbound Stadium Football Field and Playing Fields (PAP-00110788-89).

1987: In February 1987, Hoechst Corporation purchased Celanese Corporation and changed the name to Hoechst Celanese Corporation, later known as HNA Holdings, Inc. (PAP-00110788).

3. Operational History/COC Use and Presence at the Facility

The Ancillary Facility included the Lindol Plant, the Acetate Celluloid Plant, and the Scrap Plant as shown in the map below.



(PAP-00111380)

Lindol Plant

According to the *Phase II Site Investigation Ironbound Pool Site*, prepared by Dresdner, Robin and Associates, dated April 1990 (1990 DRA Phase II SI), around 1915, Celluloid invented Lindol as a camphor replacement. Similar to camphor, Lindol is a clear or white solid with a low melting point; when liquid, it is colorless. Lindol was one of the raw materials commonly used in the manufacture of celluloid and cellulose acetate. The Lindol Plant on Rome Street primarily manufactured tricresyl phosphate, but also tri-2,4-dimethylphenol phosphate, tri-phenol phosphate, and tri-orthophenol phosphate. Raw

materials included phenol, persilicic acid, phosphoric acid, potassium permanganate, oxalic acid, magnesium chloride, cresylic acids, sulfuric acid and caustic soda. The by-products from these operations were limited to hydrochloric acid, light fraction hydrocarbons and still ends. The manufacturing process generally included condensation of the raw materials, preliminary purification, final purification, dehydration, decolorization and filtration. In addition, Celanese produced Lindol for hydraulic fluid usage beginning around 1945 (PAP-00111370-72). According to the 1990 DRA Phase II SI, there is little documentation of the Lindol Plant operations due to several organizational changes over the years (PAP-00111370).

The 1990 DRA Phase II SI stated that the major processing steps for production of Lindol are as follows:

- condensation of the raw materials,
- preliminary purification,
- final purification,
- dehydration,
- decolorization, and
- filtration (PAP-00111372)

According to the 1990 DRA Phase II SI, the Pool Site was located where the Celanese Lindol Plant was utilized to produce Lindol. A 1931 Sanborn map showed development of the site and surrounding area. A facility on the map was labeled “The Celluloid Corp. Lindol Plant” and a 200 feet by 50 feet row of structures was constructed fronting Rome Street with five additional structures immediately northwest as part of the Lindol Plant (PAP-00111366-67).

Acetate Celluloid Plant and Scrap Plant

The interpretation of a 1931 Sanborn Map in the 1990 DRA Phase II SI stated that the Acetate Celluloid Plant was in Block 2059 and was constructed sometime between 1908 and 1931. The Scrap Plant was in a triangular parcel northwest of the Acetate Celluloid Plant that contained seven small structures on Block 2052 (PAP-00111367). See the 1950 map at the beginning of this report for the locations of the areas described.

An August 11, 1968 aerial photograph showed that the Acetate Celluloid Plant and Scrap Plant had been demolished to allow the construction of the present-day Ironbound Recreation Center, including the playing fields. In the 1968 aerial photograph, the foundations of the Ironbound Recreation Center were visible (PAP-00111369).
No operational information for the two plants was identified in the available file material.

4. Identified COCs

- PCBs (detected)
- PAHs (detected)
- Copper (detected)
- Lead (detected)
- Mercury (detected)

PCBs

According to the 1986 EPA Preliminary Assessment (PA) of the Tidewater Bailing property (1986 EPA PA), EPA stated that the property around Ironbound Stadium had been damaged because of releases of substances by Tidewater Baling (PAP-00108517). The COCs detected on Tidewater Bailing property consisted of PCB-1254 at a concentration of 87 ppm; PCB-1248 at a concentration of 190 ppm; lead at a concentration of 4,200 ppm. The EPA PA stated that the Tidewater Bailing's method of disposal was to dump it on the ground (PAP-00108514).

According to the 1991 Ironbound Football Field SI, the PCB concentrations were detected as follows:

- PCB contamination exceeding a concentration of 1 mg/kg was found at the surface (0-6 inches below ground surface (bgs)) at only one sampling location at a concentration of 2.6 mg/kg. This sample was located within 40 feet of the soil sample collected at 4 inches bgs which contained a PCB concentration of 19 mg/kg. There were also PCB detections in the northeast corner of the football field with concentrations between 1-19 mg/kg at a depth of 0-6 inches bgs. No other surface contamination of the field was found at a depth of 0-6 inches bgs (PAP-00107990).

- The PCB concentrations of samples in the two subsurface contamination areas ranged from 5.0 mg to 32.8 mg/kg with the exception of one sample that was found to contain 120 mg/kg PCBs (PAP-00107991).

The 1991 Ironbound Football Field SI concluded that the source of the PCB contamination could not be determined conclusively based on the data available. However, the report stated that Newark officials had observed surface water runoff from the adjacent Tidewater Baling facility and the adjacent railroad property draining into the wet area and onto the field over many years and that the Tidewater Baling facility had a history of PCB contamination (PAP-00107993).

According to the *Remedial Investigation Report (Historic Fill) Ironbound Pool, Playing Fields, Football Field, Block 2052, Lot 1*, prepared by Dresdner Robin dated November 2007 (2007 DRA RIR), analytical results for the Ironbound Pool and Playing Fields showed that in June 1994, Aroclor-1248 detections ranged between 1.6 mg/kg in soil sample SB22/2-2.7 collected from 2-2.7 feet bgs (PAP-00199037) and 0.31 mg/kg in soil sample SB21/3-4 collected 3-4 feet bgs (PAP-00199019). Aroclor-1260 was found at a concentration of 0.19 mg/kg in soil sample SB22 collected between 2-2.7 feet bgs (PAP-00199037).

According to the December 17, 2004 *Summary of Remedial Investigations, Ironbound Pool, Playing Fields, Football field,* prepared by Langan Engineering, the following PCB concentrations were detected in January 1992 sampling.

Ironbound Recreational Center Football Field PCB Concentrations (mg/kg)										
PCB	**F-1 0-6”**	**F-2 0-6”**	**F-3 0-6”**	**F-4 0-6”**	**F-5 6-15”**	**F-6 6-15”**	**F-7 6-15”**	**F-8 6-15”**	**F-9 6-15”**	**F-10 6-15”**
Aroclor 1248	0.846	ND	1.33	0.818	0.558	3.49	ND	ND	ND	2.27
	F-11 0-6”	**F-12 0-6”**	**F-13 0-6”**	**F-14 0-6”**	**F-15 6-15”**	**F-16 6-15”**	**F-17 6-15”**	**F-18 6-15”**	**F-19 6-15”**	**F-20 6-15”**
Aroclor 1248	0.672	2.48	ND	0.338	0.463	1.61	3.53	0.431	0.69	0.447

(PAP-00112099)

Ironbound Recreational Center Football Field PCB Concentrations

Contaminant	Residential Surface Soil Cleanup Criteria (mg/kg)	Non-Residential Surface Soil Cleanup Criteria (mg/kg)	Proposed Recreational Cleanup Criteria (mg/kg)	S-1 4"
Polychlorindated Biphneyls (PCBs)	0.49	2	6.28	19[R/NR]

Contaminant	Residential Surface Soil Cleanup Criteria (mg/kg)	Non-Residential Surface Soil Cleanup Criteria (mg/kg)	Proposed Recreational Cleanup Criteria (mg/kg)	EP-004-D 6-15"	EP-005-D 6-15"	EP-006-D 6-15"	EP-009-D 6-15"	EP-009-S 0-6"	EP-010-D 6-15"	EP-011-D 6-15"	EP-012-D 6-15"
Polychlorindated Biphneyls (PCBs)	0.49	2	6.28	29[R/NR]	5[R/NR]	120[R/NR]	31[R/NR]	2.6[R/NR]	16.1R/[NR]	11[R/NR]	1[R]

Contaminant	Residential Surface Soil Cleanup Criteria (mg/kg)	Non-Residential Surface Soil Cleanup Criteria (mg/kg)	Proposed Cleanup Criteria (mg/kg)	SS-2 0-6"	SS-3 0-6"	SS-6 0-6"	SS-7 0-6"	SS-8 0-6"	SS-9 0-6"
Polychlorindated Biphneyls (PCBs)	0.49	2	6.28	.5[R]	.64[R]	2.32[R/NR]	.56[R]	3.9[R/NR]	1.13[R]

R = Exceeds Residential Cleanup Criteria
NR = Exceeds Non-Residential Cleanup Criteria

(PAP-00112100)

According to the 2011 *Soil Remedial Investigation Report, Proposed Sand Soccer Court of Ironbound Football Field*, stated that Aroclor-1248 concentrations greater than 10 ppm were identified at three soil sampling locations:

- FF-SB17 – 11 ppm at a depth of 2-2.5
- FF-SB16 – 53 ppm at a depth of 3-3.5 feet
- FF-SB15 – 140 ppm at a depth of 2-2.5 feet (PAP-00199197-98).

PAHs

According to the *Summary of Remedial Investigations - Ironbound Pool, Playing Fields, Football Field Block 2052, Lot 1* prepared by Dresdner Robin dated December 17, 2004 (2004 DRA RI Summary), extensive soil and groundwater investigations were conducted at the Ironbound Pool property following the discovery of contamination at the site in 1987 (PAP-00111711, 14).

Sampling at the Ironbound Pool area was conducted during a Phase II Investigation and a summary of the PAH concentrations were cited in the undated *Remedial Investigation Report* as follows (PAP-00111865).

Ironbound Pool PAH Concentrations (ug/kg)					
PAH	**S-7 0-4 feet**	**S-10 13-14 feet**	**S-11 0-5 feet**	**S-12 5-12 feet**	**S-13 1-2 feet**
Anthracene	ND	ND	ND	ND	2,500
Acenaphthylene	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	1,400
Benzo(a)anthracene	1,000	ND	1,200	ND	4,490
Benzo(b)fluoranthene	1,900	ND	2,700	ND	8,240
Benzo(k)fluoranthene	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	ND	1,700	ND	5,930
Chrysene	1,200	ND	1,500	ND	4,890
Fluoranthene	2,100	ND	2,300	770	9,570
Fluoranthene	ND	ND	ND	ND	1,600
Indeno(1,2,3-cd)pyrene	ND	ND	730	ND	2,800
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	2,300
Phenanthrene	1,400	640	1,800	ND	8,300
Pyrene	1,700	460	2,200	820	7,880

According to the 2004 DRA RI Summary, investigations of the surface soils of the Playing Fields were conducted in 1991 and consisted of the collection of 10 soil samples. All samples were collected at the zero to two foot interval and were analyzed for PAHs and metals. Results of the analysis revealed the presence of PAHs and metals at concentrations that exceeded "the proposed (at that time) surface soil cleanup criteria for non- residential sites" (PAP-00111716). The following table shows the PAH concentrations.

Contaminant	Surifical Soil Cleanup Criteria			S-11 12"	S-12 1'-2'	S-13 12"
	Residential	Non-Residential	Recreational			
3,4-Benzofluoranthene (Benzo(b)fluoranthene)	.9	4	12	11.9$^{R/NR}$	15.0$^{R/NR}$	1.5^{R}
Benzo(a)anthracene	.9	4	12	5.5$^{R/NR}$	16.0$^{R/NR}$	.82
Benzo(a)pyrene (BaP)	.66	.66	1.26	5.9$^{R/NR}$	8.5$^{R/NR}$	.84^{R}
Benzo(k)fluoranthene	.9	4	12		14.0$^{R/NR}$	
Chrysene	9	40	120	6.3	12.0^{R}	.96
Dibenz(a,h)anthracene	.66	.66	1.26	1.6$^{R/NR}$	2.2$^{R/NR}$	ND
Indeno(1,2,3-cd)pyrene	.9	4	12	5.5$^{R/NR}$	4.7$^{R/NR}$	ND

R = Exceeds Residential Cleanup Criteria
ND = Substance not detected

(PAP-00112086)

The following table shows the PAH, depth of soil sample, and analytical results for sampling conducted in September 1990 at the Ironbound Pool Site and reported in the undated Remedial Investigation Report.

Ironbound Pool PAH Concentrations (ppb)		
PAH	**MW-13 3.5-4.0 feet**	**S-14 3.5-4.0 feet**
Benzo(a)anthracene	1,800	6,200
Benzo(b)fluoranthene	3,200	10,000
Benzo(k)fluoranthene	1,800	10,000
Benzo(a)pyrene	1,800	5,800
Indeno(1,2,3-cd)pyrene	780	3,100
Dibenzo(a,h)anthracene	360	530
Benzo(g,h,i)perylene	460	740

(PAP-00111843)

According to the 1995 *Subsurface Remedial Investigation Report for Ironbound Recreation Center, Playing Fields and Football Field, Block 2052, Lot 1* prepared by Dresdner Robin Environmental Management dated January 1995 (1995 DRA Sub RIR), analytical results showed the following concentration of PAHs in one sample (SB-14 depth of 8-9 feet) for “Investigation Area II” (the former Celluloid Plant):

- Benzo(a)anthracene 6.2 milligrams per kilogram (mg/kg)
- Benzo(b)fluoranthene 6.4 mg/kg
- Benzo(k)fluoranthene 2.4 mg/kg
- Benzo(a)pyrene 5.1 mg/kg
- Indeno(1,2,3-cd)pyrene 3.4 mg/kg
- Dibenzo(a,h)anthracene 1.0 mg/kg (PAP-00111477-78).

According to the December 17, 2004 *Summary of Remedial Investigations, Ironbound Pool, Playing Fields, Football field,* prepared by Langan Engineering, two discrete locations in the north corner of the Ironbound Pool property were found to have concentrations of carcinogenic polycyclic aromatic hydrocarbons (PAHs) above the “New Jersey State policy action guidelines” at the time of a 1991 remedial investigation. The 2004 DRA RI Summary stated that the sources of this contamination may be attributable to a former off-site asphalt mixing plant located next to this area or the former raw material storage tanks (PAP-00111715). The following PAH concentrations were reported during March 23, 1993 sampling.

Parameters Exceeding Cleanup Criteria Ironbound Recreation Center

Parameter	CASRN	Surface Soil Cleanup Criteria			Laboratory Analysis Results (mg/kg)							
		Residential	Non-Residential	Recreational	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Benzo(a)anthracene	56-55-3	.9	4	12.6	.620	.300 J	.290 J	1.400 R	.420	.140 J	.053 J	.380
Benzo(b)fluoranthene	205-99-2	0.66	0.66	1.26	.730 R/NR	.390	.330	2.000 R/NR	.650	.240 J	.098 J	.780 R/NR
Benzo(a)pyrene	50-32-8	0.66	0.66	1.26	.600	.320 J	.340	1.400 R/NR	.460	.150 J	.057 J	.500

Parameter	CASRN	Surface Soil Cleanup Criteria			Laboratory Analysis Results mg/kg							
		Residential	Non-Residential	Recreational	SS-9	SS-10	SS-11	SS-12	SS-13	SS-14	SS-15	Average
Benzo(a)anthracene	56-55-3	.9	4	12.6	.064 J	ND	ND	.058 J	.230 J	.370	.450	.340
Benzo(b)fluoranthene	205-99-2	0.66	0.66	1.26	.120 J	ND	ND	.100 J	.320 J	.530	.680 R/NR	.487
Benzo(a)pyrene	50-32-8	0.66	0.66	1.26	.062 J	ND	ND	.060 J	.220 J	.370	.490	.357

R = Exceeds Residential Cleanup Criteria
ND = Substance not detected

(PAP-00112093)

Copper

Sampling at the Ironbound Pool area was conducted during a Phase II Investigation and copper was detected at 121 mg/kg at a depth of 0-4 feet bgs and 133 mg/kg at a depth of 1-2 feet bgs (PAP-00111866).

According to the December 2011, *Soil Remedial Investigation Report Proposed Sand Soccer Court of Ironbound Football Field,* prepared by Weston the maximum concentration of copper detected at the proposed sand soccer court was in soil sample FF-SB13 collected on October 8, 2010 from 3-3.5 ft bgs at 420 mg/kg (PAP-00199191-95).

Lead

Sampling at the Ironbound Pool area (formerly the area of the Lindol plant) was conducted during a Phase II Investigation and lead was detected at 1,270 mg/kg at a depth of 0-4 feet and 386 mg/kg at a depth of 1-2 feet (PAP-00111866).

The December 17, 2004 *Summary of Remedial Investigations, Ironbound Pool, Playing Fields, Football field,* prepared by Langan Engineering, reported the following lead concentrations from sampling conducted on March 23, 1993 (PAP-00112093).

Ironbound Recreational Center Lead Concentrations (mg/kg)								
Metal	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Lead	313	246	234	528	241	97	64.7	252
Metal	SS-9	SS-10	SS-11	SS-12	SS-13	SS-14	SS-15	Average
Lead	30	12.5	10.1	54	175	36.2	288	172.1

According to the December 2011, *Soil Remedial Investigation Report Proposed Sand Soccer Court of Ironbound Football Field,* prepared by Weston the maximum concentration of lead detected at the proposed sand soccer court was in soil sample FF-SB10 collected on October 8, 2010 from 2-2.5 ft bgs at 794 mg/kg (PAP-00199191-95).

Mercury

Sampling at the Ironbound Pool area was conducted during a Phase II Investigation and mercury was detected at 2.27 mg/kg at a depth of 0-4 feet bgs and 1.99 mg/kg at a depth of 1-2 feet bgs (PAP-00111866).

The 2004 DRA RI Summary reported that at the Ironbound Pool Site (Sample S-23) mercury was detected as follows: 1.29 mg/kg at a depth of 5-5.5 feet bgs and 5.4 mg/kg at a depth 7-7.5 feet bgs (PAP-00111845).

According to the December 2011, *Soil Remedial Investigation Report Proposed Sand Soccer Court of Ironbound Football Field,* prepared by Weston the maximum concentration of mercury detected at the proposed sand soccer court was in soil sample FF-SB17 collected on October 7, 2010 from 3-3.5 ft bgs at 75.9 mg/kg (PAP-00199191-95).

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead,

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current

copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PCBs, PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00198948).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	1,270 mg/kg
Copper	420 mg/kg
Mercury	75.9 mg/kg
Benzo(a)anthracene	6.2 mg/kg
Benzo(a)pyrene	5.93 mg/kg
Benzo(b)fluoranthene	10 mg/kg
Benzo(k)fluoranthene	10 mg/kg
Dibenzo(a,h)anthracene	1.0 mg/kg
Indeno(1,2,3-cd)pyrene	3.4 mg/kg
PCBs	120 mg/kg

According to the 2007 DRA RIR, all 32 borings revealed that fill materials were generally present throughout the Site and ranged in depth from 0-6 feet below ground surface (bgs). The fill consisted of bricks, glass fragments, wood fragments, metal scraps, ash, rubble, concrete, rubber fragments, sand, and gravel. Underlying the fill material was a natural soil consisting of fine to medium-grained gray sand with thin interfingering silt and clay laminae. The thickness of this zone varied from 10 to 15 feet bgs. The physical characteristics of the fill material were consistent throughout the site (PAP-00198947).

5. COC Pathways

Sanitary Sewer

There is no information regarding sanitary sewers in the available file material.

Storm Sewer

There is no information regarding storm sewers in the available file material.

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version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].

[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

Direct Release

There is no information regarding direct release in the available file material.

Spills

There is no information regarding spills in the available file material.

6. Regulatory History/Enforcement Actions

An Agreement Regarding the Remediation of Soils at the Ironbound Recreation Football Field between City of Newark and CNA was signed on October 30, 2017 (PAP-00110794-806). CNA was to remediate all soils at the site contaminated with PCBs to a standard of 5 ppm, and if soils were comingled with other contaminations, CNA was to dispose of those soils at an appropriate off-site facility. Post-excavation sampling was to occur, and a 10-inch cap was to be installed over the affected areas (PAP-00110796).

Inspections

There is no information regarding inspections in the available file material.

Violations

There is no information regarding violations in the available file material.

Permits

There is no information regarding permits in the available file material.

7. Response Actions

Characterization Activities

The following is a list of major response action documents identified in the available file material:

- *Phase II Site Investigation Ironbound Pool Site* dated April 1990 (PAP-00111363)
- *Site Investigation and Remedial Approach for The Newark Ironbound Stadium Football Field* dated May 1991 (date handwritten on document) (PAP-0107990)
- *Subsurface Remedial Investigation Report for Ironbound Recreation Center – Playing Fields and Football Field Block 2052, Lot 1 at St. Charles Street* dated January 1995 (PAP-00111456)
- *Summary of Remedial Investigations - Ironbound Pool, Playing Fields, Football Field Block 2052, Lot 1* dated December 17, 2004 (PAP-00111708)
- *Remedial Investigation Report – Historic Fill, Ironbound Pool, Play Fields, and Football Field* dated November 2007 (PAP-00198939)

- *Soil Remedial Investigation Report, Proposed Sand Soccer Court of Ironbound Football Field dated 2011 Tables 2A-2D Soil Sample Results Summary* (PAP-00199175)
- *Self-Implementing Work Plan On-Site Cleanup and Disposal of PCB Waste – Ironbound Football Field Site, 46-132 Saint Charles Place* (PAP-00110896)

As noted previously, on May 2, 1966, Charter Bulk Service, Inc., formerly Continental Bulk Services, Inc. sold the property they had purchased from Celanese Corporation of America in 1962 to the City of Newark (PAP-00111292-93). According to the 2017 Pre-Litigation Settlement, once Block 2052, Lot 1 was conveyed to the City of Newark in the 1960s, the City began construction of the Ironbound Recreation Center which entailed the Ironbound Pool, Skating Rink, Ironbound Bleachers, Ironbound Aquatic Center, and the Newark Ironbound Stadium Football Field and Playing Fields. The 2017 Pre-Litigation Settlement also noted that the City of Newark and CNA agreed to fund and manage certain investigative actions at the site in 1993 (PAP-00110788-89). Data from investigations associated with these facilities is presented below.

Remedial Activities

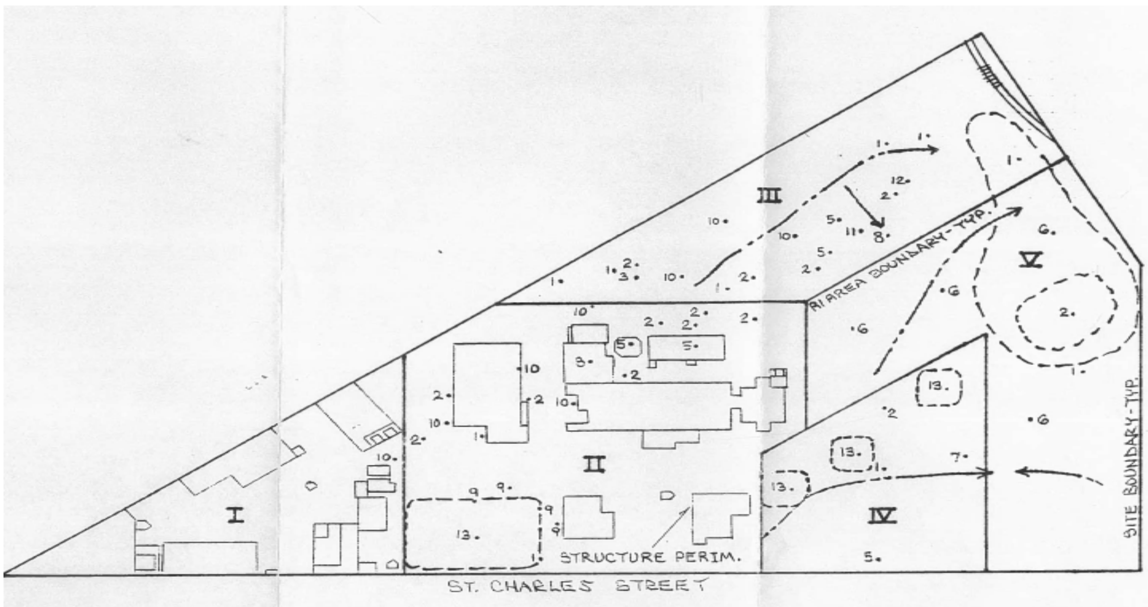
According to the *Site Investigation and Remedial Approach for The Newark Ironbound Stadium Football Field* dated May 1991, prepared by an unknown author (1991 Ironbound Football Field SI) for the ancillary property located at St. Charles and Rome Streets, since its construction, the Football Field had a history of poor drainage, and it is possible that PCB contaminated run-off from the adjacent sites could have puddled in the lower areas of the field. To correct the drainage issue, City of Newark placed top soil on several occasions in the low, poorly drained areas. According to the report, these areas represent collection ponds containing PCB contamination from uncontrolled runoff from an adjacent Tidewater Baling Corporation facility that flows along the Conrail Railroad spur (PAP-00107993-94). The report referred to an August 18, 1989 U.S. EPA Pollution Report that linked the PCB contamination near the scoreboard area with the Tidewater Baling Corporation and possibly Conrail (PAP-00107990). The cleanup plan was to excavate a kidney-shaped area and subsurface (6-15 inches bgs) contamination exceeding 5 mg/kg of PCBs (PAP-00107995).

As documented in the 1995 DRA Sub RIR, a subsurface remedial investigation was conducted pursuant to a Memorandum of Understanding executed on December 23, 1993 between City of Newark and the NJDEP. Five areas of investigation were identified. A figure showing the locations of the Investigation Areas is below.

- Investigation Area I - Former Scrap Plastic Plant encompasses approximately one area and is located at the western-end of the site
- Investigation Area II - Former Celluloid Plant encompasses approximately two and half acres and includes four former operational buildings, a former drum storage location, a tank trailer staging area, and two aboveground storage tanks
- Investigation Area III - Former "Backyard" Area encompasses approximately one and one-half acres and includes one former drum storage area and two former two aboveground storage tanks

- Investigation Area IV - Frontyard Staging Area encompasses approximately one acre comprised of one former aboveground storage tank and three former tank trailer staging areas
- Investigation of Area V - Former Coal Yard encompasses approximately two acres and does not contain any former operational structures (PAP-00111468).

The location of each area is presented below (PAP-00111547):



According to the 1995 DRA Sub RIR, the concentrations of all targeted parameters were below the NJDEP residential direct contact cleanup criteria with the exception of one sample (SB-14). The concentrations for benzo(a)anthracene (6.2 mg/kg), benzo(b)fluoranthene (6.4 mg/kg), benzo(k)fluoranthene (2.4 mg/kg), benzo(a)pyrene (5.1 mg/kg), indeno(1,2,3-cd)pyrene (3.4 mg/kg) and dibenz(a, h)anthracene (1.0 mg/kg) were all above the Residential Direct Contact Cleanup Criteria (PAP-00111478). No further investigation was recommended (PAP-00111477-78, 488).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file materials.

Diamond Alkali OU2 Allocation
ADR Confidential
Facility Data Report

CELANESE CORPORATION OF AMERICA (CNA HOLDINGS, LLC)

Facility Name, Address and Size: Celanese Plastics Company, 290 Ferry Street, Newark, New Jersey; portions of Block 2045, Lot 1; 17 acres. In 1972, Celanese had 665 employees working 3 shifts per day, 5 and 7 days per week (PAP-00105558).

1. **Business Type:** Manufacturing of plastic sheet and film (PAP-00105911).

2. **Time Period of Ownership/Operations**

   Operator: 1890-1973
   Owner: 1890-1973 (PAP-00105911) (PAP-00105911)

   1871: The Celluloid Manufacturing Company was organized in Albany on January 28, 1871 (PAP-00105622).

   1872: Celluloid Manufacturing Company operations were transferred to Newark, New Jersey (PAP-00105622).

   1890: Celluloid Manufacturing Company operations began at 290 Ferry Street (PAP-00105911).

   1941: Celluloid Corporation merged into the surviving corporation, Celanese Corporation of America (PAP-00105911).

   1973: Celanese Corporation of America sold the facility to XCEL Corporation, which manufactured plastic sheet and film between January 1973 and July 1979 (PAP-00105911).

   1979: Georgia Pacific was owner/operator of the site following XCEL, and manufactured plastic sheet and film similar to previous owners (PAP-00105949).

3. **Operational History/COC Use and Presence at the Facility**

Celluloid Manufacturing

The first step in the celluloid manufacturing process was to pretreat the cellulose feedstock. Throughout much of the plant's operation (at least until 1938), the primary source of cellulose was cotton. Cotton is the purest form of cellulose and contains approximately 90 percent cellulose prior to any purification steps (PAP-00105537).

The cellulose feedstock was then added to a nitration bath, where it was heated and mixed with sulfuric acid to form nitrocellulose. Occasionally phosphoric acid and/or oxalic acid were used in this process, depending on the iron content of the cellulose (PAP-00111231, PAP-00112731). The nitrocellulose was next either bleached (if whiteness or transparency of the product was desired) or treated with alcohol (PAP-00111231). Potassium permanganate, sulfuric acid, and hydrochloric acid were used during the nitrocellulose bleaching process (PAP-00107289, PAP-00108354). The most

common types of alcohol used in the celluloid manufacturing process were grain alcohols like methanol and ethanol (PAP-00107291). After bleaching (or after treatment with alcohol, if the final celluloid product did not need to be white or transparent), most of the water was removed from the nitrocellulose pulp by spinning in a centrifugal machine (PAP-00107611).

The next step was to mechanically mix nitrocellulose with a plasticizer (camphor and later Lindol) and any dyes or other specialty colorants and stabilizers that may have been required to achieve the desired properties and color of the celluloid end product in a grinding mill (PAP-00107612). Camphor was originally used as the plasticizer in the manufacturing of celluloid, but was phased out of use during World War I, when the camphor trade source was significantly interrupted and prices became highly variable. Lindol was used as a replacement for camphor in the celluloid manufacturing process (PAP-00111257).

Next, the ground nitrocellulose pulp was formed and pressed into cakes in a hydraulic press to remove moisture (PAP-00108360). The next step in the process was to break the cakes into pieces small enough for alcohol or other solvents to penetrate (PAP-00107294). "Seasoning" of nitrocellulose with alcohol occurred in a closed box called a "seasoning box." The alcohol, camphor (or Lindol), and nitrocellulose were agitated while additional alcohol was added to the boxes in order to increase penetration of the alcohol and decrease the time spent in the seasoning boxes. Acid dyes or stabilizers like urea could be added in the alcohol during this step (PAP-00107290). After alcohol penetration was complete, the entire mixture would enter a rolling mill for further mixing (PAP-00108376).

The next step in the process was referred to as "steeping" and could be accomplished by one of several mechanisms. In this process, the nitrocellulose was allowed prolonged contact with a camphor-alcohol solvent in order to change the macro-structure of the nitrocellulose fibers. Although it is possible to accomplish this transformation in a manual process that takes place within a steeping box, the more common method was to perform mechanical mixing in a kneading machine (PAP-00107462; PAP-00108496).

At this point, additional pigmentation of the celluloid product could be obtained by staining the celluloid with either mineral colors (e.g., cadmium yellows, cobalt blue, or natural black ochre) or organic colors (e.g., chrysoidine dyes) (PAP-00108373). Alternatively, if no additional pigmentation was required, the final stage was to dry and form the celluloid into sheets or blocks (PAP-00107560). The finished celluloid sheets or blocks were sold to off-site manufacturers for the production of various household items, including cuffs and collars, hats and trimmings, shoe protectors, and dominoes (PAP-00105612).

Cellulose Acetate Products

A 1972 Waste Effluent Survey described raw materials used as cellulose acetate flake, plasticizers, and solvents. According to this survey, casting operations involved mixing these materials together and casting onto a heated roll, stripping off, drying, and spooling up into rolls. In the extrusion process, pellet mixes of flake and plasticizer were

extruded as sheet or film product. This document notes a production rate of 90,000 pounds per day (PAP-0010555).

Scrap cellulose acetate from the main plant area was stored and recycled into pellets in the ancillary operations area located at 226 Rome (PAP-00111257).

Lindol Manufacturing

Around 1915, Celluloid invented Lindol as a camphor replacement. Similar to camphor, Lindol is a clear or white solid with a low melting point; when liquid, it is colorless (PAP-00112376). More information on this process can be reviewed in the Celanese 226 Rome Facility Data Report.

According to the September 1988 *Status Report on Cleanup Activities Main Plant Area for Georgia Pacific Corporation*, prepared by BCM, the following Underground Storage Tanks and contents were located on the facility (PAP-00198622).

UNDERGROUND STORAGE TANK INVENTORY

Tank No.	Capacity (gal)	Former Contents
1	10,000	Chronotex
2	10,000	Acetone
3	10,000	Acetone
4	10,000	Acetone
5	10,000	Acetone
6	3,800	Methanol and Acetone
7	3,800	Dimethyl Phthlate
8	10,000	Methyl Chloride
9	10,000	Methyl Chloride
10	10,000	Methanol
11	10,000	Methanol
12	5,000	Methyl Chloride
13	5,000	Methyl Chloride
14	5,000	Diethyl Phthalate
15	10,000	Diethyl Phthalate
16	10,000	Acetone
17	5,000	Methyl Chloride, Acetone, Methanol, Water
18	10,000	Diethyl Phthalate
19	10,000	Diethyl Phthalate
20	10,000	Methyl Chloride
21	10,000	Methyl Chloride/Methanol
22	10,000	Methyl Chloride
23	10,000	Methyl Chloride
24	10,000	Methyl Chloride/Methanol
25	5,000	Unknown

According to correspondence between Georgia-Pacific Corporation and NJDEP dated 1984, seven tanks were located under Building #47 of which Tank 6 was known to leak if filled above a certain level (PAP-00109264-67).

4. Identified COCs

- PCBs (detected)
- Dioxins and Furans (detected)
- PAHs (detected)
- Dieldrin (detected)
- DDx (detected)
- PAHs (detected)
- Copper (detected)
- Lead (detected)
- Mercury (detected)

PCBs

According to the June 7, 1984 *Results of Soil Sampling Report* for Georgia Pacific Corporations prepared by The Earth Technology Corporation, PCBs (total as Arochlor 1260) was detected at 5.25 mg/kg from sample 9524 collected on May 30, 1984 (PAP-00106743).

According to an [Environmental Responsibility Cleanup Act] *ECRA Cleanup Program ECRA Case #84056B for Georgia-Pacific Corporation*, dated March 2, 1988, polymer extruded products sewer sediment sample (GPS-SS-1) contained 0.894 mg/kg Aroclor 1254 (PAP-00198682).

Dioxins and Furans

According to the November 1988 *Status Report on Cleanup Activities Main Plant Area for Georgia Pacific Corporation*, prepared by BCM, post-excavation soil samples collected on June 22, 1988, in the Building 47 Tank Vault Area contained 0.75 mg/kg dibenzofuran in sample T33 Dup and 0.63 mg/kg in sample T33, collected at 2 feet below ground surface (ft bgs) (PAP-00106407). The type of dibenzofuran was not specified.

PAHs

According to soil sampling results attached to a status report letter to NJDEP from The Earth Technology Corporation dated September 30, 1987, soil sample GPS-17 (1.5-2.0 ft bgs), collected on June 2, 1987, from the coal storage area, contained benzo(a)anthracene (0.422 mg/kg), benzo(a)pyrene (0.328 mg/kg), benzo(b)fluoranthene (0.567 mg/kg), benzo(k)fluoranthene (0.336 mg/kg), chrysene (0.426 mg/kg) and indeno(1,2,3-cd)pyrene (0.139 mg/kg) (PAP-00198694).

The Magazine Street sewer sediment sample (GPS-SS-2) contained benzo(a)anthracene (1.944 mg/kg), benzo(a)pyrene (2.308 mg/kg), benzo(b)fluoranthene (1.743 mg/kg), benzo(k)fluoranthene (2.657 mg/kg), chrysene (2.171 mg/kg), fluoranthene (3.214 mg/kg), phenanthrene (1.842 mg/kg), and pyrene (3.522 mg/kg) (PAP-00198711).

The following PAH concentrations were detected at the casting area process cooling towers (PAP-00198705).

Diamond Alkali OU2 Allocation
ADR Confidential
Facility Data Report

	GPS-S-1(0.5-1.0')	GPS-S-2(0.5-1.0')
ACENAPHTHENE	BMDL(3)	406
ANTHRACENE	448	669
BENZO(A) ANTHRACENE	1438	1963
BENZO(A) PYRENE	1314	1845
BENZO(B) FLUORANTHENE	1184	1859
BENZO(K) FLUORANTHENE	1180	1502
BENZO(GHI) PERYLENE	BMDL(3)	382
BIS(2-ETHYLHEXYL) PHTHALATE	BMDL(3)	BMDL(3)
CHRYSENE	1478	2023
DIBENZO(A,H) ANTHRACENE	BMDL(3)	ND
DIETHYL PHTHALATE	BMDL(3)	BMDL(3)
DI-N-BUTYL PHTHALATE	[1658](2)	[876](2)
FLUORANTHENE	3084	3854
FLUORENE	BMDL(3)	333
INDENO(1,2,3-CD) PYRENE	493	746
NAPHTHALENE	ND	BMDL(3)
PHENANTHRENE	1942	3437
PYRENE	2353	4252
TOTAL	14921	23271
NJDEP GUIDELINES	10000	10000

NOTES:

1. All results are in parts per billion (PPB)

According to the September 1988 *Status Report on Cleanup Activities Main Plant Area for Georgia Pacific Corporation*, prepared by BCM, the following max PAH concentrations were detected in soil samples collected on June 22, 1988, from the Building 47 Tank Vault Area: anthracene (2.522 mg/kg), benzo(a)anthracene (8.435 mg/kg), benzo(a)pyrene (2.152 mg/kg), benzo(b)fluoranthene (3.446 mg/kg),benzo (g,h,i)perylene (.652 mg/kg), benzo(k)fluoranthene (3.446 mg/kg), chrysene (3.457 mg/kg), dibenzo(a,h)anthracene (0.511 mg/kg), fluoranthene (10.511 mg/kg), fluorene (1.293 mg/kg), indeno(1,2,3-cd)pyrene (1.152 mg/kg), phenanthrene (15.533 mg/kg), and pyrene (15.685 mg/kg) (PAP-00198634-35). The post-excavation soil samples collected on July 29, 1988, had the following maximum concentrations detected: acenaphthene (.337 mg/kg), acenaphthylene (.256 mg/kg), anthracene (41.453 mg/kg), benzo(a)anthracene (1.256 mg/kg), benzo(a)pyrene (73.977 mg/kg), benzo(b)fluoranthene (49.471 mg/kg), benzo(g,h,i)perylene (9.639 mg/kg), benzo(k)fluoranthene (49.477 mg/kg), chrysene (.762 mg/kg), dibenz(a,h)anthracene (6.372 mg/kg), fluoranthene (101.860 mg/kg), fluorene (29.988 mg/kg)indeno(1,2,3-cd)pyrene (9.639 mg/kg), napthalene (29.384 mg/kg), phenanthrene (41.453 mg/kg), and pyrene (171.151 mg/kg) (PAP-00106409-10).

Post-excavation samples collected on August 24, 1988, from the solvent recovery system (SRS) underground storage tanks area had maximum reported concentrations of: anthracene (2.4 mg/kg), benzo(a)anthracene (6.03 mg/kg), benzo(a)pyrene (7.26 mg/kg), benzo(b)fluoranthene (5.95 mg/kg), benzo(g,h,i)perylene (1.8 mg/kg), benzo(k)fluoranthene (5.95 mg/kg), chrysene (7.76 mg/kg), dibenz(a,h)anthracene ( ),fluoranthene (21.8 mg/kg), fluorene (0.60 mg/kg), indeno(1,2,3-cd)pyrene (1.0 mg/kg), phenanthrene (2.0 mg/kg), and pyrene (7.85 mg/kg) (PAP-00106415-28).
According to the November 1988, *ECRA Case No. 84056A Cleanup Plan for the Main Plant Area, Georgia Pacific Corporation*, prepared by BCM, post-excavation soil samples were taken from the trench and analyzed. PAHs were detected at total concentrations of approximately 14 to 65 mg/kg in the Building 47 Vaulted Tanks (PAP-00106330).

According to the Declaration of Environmental Restrictions (DER) made on December 2, 1994, by Georgia-Pacific Corporation, the following PAH concentrations have been found onsite (PAP-00198925):

TABLE-1 (Continued)
Summary of Soil Boring Analytical Results exceeding Residential Soil Cleanup Criteria
Georgia Pacific, Newark, New Jersey

Sample Point	T 33 2'	T 44 2'	T 33D 2'	NJDEP Residential Soil Cleanup Criteria
Sample Location	Bldg 47 Courtyard	Bldg 47 Courtyard	Bldg 47 Courtyard	
Sample Depth (feet)	12	12	12	
Sample Date	8/24/88	8/30/88	8/30/88	
Benzo(a)anthracene	6.837	1.0	8.435	0.9
Benzo(a)pyrene	1.891	--	2.152	0.66
Benzo(k)fluoranthene	2.837	--	3.446	0.9
Indeno(1,2,3-cd) pyrene	--	--	1.152	0.9

(PAP-00198926)

Sample Point	15S3	16S	16N	NJDEP Residential Soil Cleanup Criteria
Sample Location	SRS Area UGST	SRS Area UGST	SRS Area UGST	
Sample Depth (feet)	10	10	10	
Sample Date	8/24/88	8/30/88	8/30/88	
Benzo(a)anthracene	1.10	3.6	1.6	0.9
Benzo(a)pyrene	1.0	2.8	1.6	0.66
Benzo(k)fluoranthene	--	2.2	1.1	0.9
Indeno(1,2,3-cd) pyrene	--	--	1.0	0.9

Sample Point	T 2	T 3	T 7*	T 9*	NJDEP Residential Soil Cleanup Standard
Sample Location	Bldg 47 Courtyard	Bldg 47 Courtyard	Bldg 47 Courtyard	Bldg 47 Courtyard	
Sample Depth (feet)	10	10	10	10	
Sample Date	7/29/88	7/29/88	7/29/88	7/29/88	
Benzo(a)anthracene	1.256	--	1.786	1.195	0.9
Benzo(a)pyrene	1.302	73.977	0.881	1.149	0.66
Benzo(k)fluoranthene	0.998	49.477	--	--	0.9
Dibenz(ah)anthracene	--	6.372	--	--	0.66
Indeno(1,2,3-cd) pyrene	1.220	9.639	--	--	0.9

NOTES:
1. Sample depths are in feet below grade.
2. Concentrations are in parts per million.
3. "--" Not in exceedance of Residential soil clean up standards dated October 1993.
4. "*" Residual soil immediately above concrete slab.

(PAP-00198925-27)

Dieldrin

According to the June 7, 1984 *Results of Soil Sampling Report* for Georgia Pacific Corporations prepared by The Earth Technology Corporation, dieldrin was detected at 3.4 mg/kg from sample 9524 collected on May 30, 1984 (PAP-00106743, 881, 889).

According to the November 1988 *Appendix D Volume 3, Part 1 for the Main Plant Area Cleanup Plan*, dieldrin was detected in soil sample E814477 (0.019 mg/kg), sample E814479 (0.077 mg/kg) and E814480 (0.190 mg/kg) collected on October 7, 1988 from 1.0 - 1.5 ft bgs (PAP-00106868, 881, 889).

DDx

According to the June 7, 1984 *Results of Soil Sampling Report* for Georgia Pacific Corporations prepared by The Earth Technology Corporation, DDE, DDT and DDD was detected at 3.4 mg/kg, 3.44 mg/kg and 3.4 mg/kg respectively from sample 9524 collected on May 30, 1984 (PAP-00106743).

According to the November 1988 *Appendix D Volume 3, Part 1 for the Main Plant Area Cleanup Plan*, 4,4'-DDT was detected in soil sample E814477 (0.035 mg/kg), E814479 (0.068 mg/kg) and E814480 (0.066 mg/kg) collected on October 7, 1988 from 1.0 - 1.5 ft bgs (PAP-00106868, 881, 889).

Metals – Copper, Lead, and Mercury

According to soil sampling results attached to a status report letter to NJDEP from The Earth Technology Corporation dated September 30, 1987, soil sample GPS-17 (1.5-2.0 ft bgs), collected from the coal storage area, contained copper (134 mg/kg), lead (477 mg/kg) and mercury (13 mg/kg) (PAP-00198695). The report also noted copper (30.1 mg/kg) and lead (192 mg/kg) in soil sample GPS-26A (0-0.5 ft bgs) collected from the copper square yard (PAP-00198701). The Magazine Street sewer sediment sample (GPS-SS-2) contained copper (6,140 mg/kg), lead (424 mg/kg) and mercury (0.408 mg/kg) (PAP-00198711).

The following metal concentrations were also reported (PAP-00198703-08).

Powerhouse Cleaning Tank

III. PRIORITY POLLUTANT METAL (PPB)

METAL	GPS-33A(0-0.5')	GPS-33B (4-4.5')	NJDEP GUIDELINES
ANTIMONY	0.164	0.268	2.0
ARSENIC	1.69	3.08	20.0
BERYLLIUM	<0.500	0.605	1.0
CADMIUM	<0.500	0.592	3.0
CHROMIUM	16.8	30.0	100
COPPER	14.0	17.3	170
LEAD	26.0	35.7	100
MERCURY	<0.100	<0.100	1.0

Note that the heading on this table indicates that these results are in parts per billion (ppb), but that the NJDEP guidelines match those in the following tables, reported in parts per million (ppm) (PAP-00198703).

Casting Area Raw Material Unloading

I. PRIORITY POLLUTANT METALS (PPM)

METAL	GPS-S-3(1.5-2.0')	GPS-S-4(1.5-2.0')	NJDEP GUIDELINES
Antimony	0.168	2.58	2.0
Arsenic	3.78	23.8	20.0
Beryllium	0.846	1.58	1.0
Cadmium	1.46	3.34	3.0
Chromium	22.0	108	100
Copper	29.3	35.1	170
Lead	73.1	597	100
Mercury	0.192	0.302	1.0

(PAP-00198707)

Building 199 Yard Finished Product Storage

I. PRIORITY POLLUTANT METALS (PPM)

METAL	GPS-S-5(0-0.5')	GPS-S-6(0-0.5')	NJDEP GUIDELINES
Antimony	<0.100	<0.100	2.0
Arsenic	2.95	1.86	20
Beryllium	0.829	<0.500	1
Cadmium	<0.500	<0.500	3.0
Chromium	23.0	<16.0	100
Copper	27.4	21.0	170
Lead	25.0	14.3	100
Mercury	<0.100	<0.100	1.0

(PAP-00198708)

Powerhouse Scrap Storage Area (ppm)

ORING IMBER	DEPTH (FT)	SAMPLE NUMBER	COPPER	LEAD	MERCURY
-13	0 – 05.	GPS-13A	222	471	<0.100
	6 – 6.5	GPS-13B	61.3	281	<0.100
-14	0 – 0.5	GPS-14A	19.1	78.0	<0.100
	7.5– 8.0	GPS-14B	6.79	13.5	<0.100
-15	0 – 0.5	GPS-15A	160.0	74.9	0.943
	8 – 8.5	GPS-15B	3.53	9.72	<.100
-16	0 – 0.5	GPS-16A	19.5	77.7	0.381
	7.5– 8.0	GPS-16B	7.53	60.3	<0.100
B-10	0 – 0.5	GPS-10A	<2.00	1.92	<0.100
	4 – 4.5	GPS-10B	3.34	24.7	<0.100
B-11	0 – 0.5	GPS-11A	22.7	85.0	0.519
	6.5– 7.0	GPS-11B	6.3	55.8	<0.100

(PAP-00198875-76)

Powerhouse Underground Storage Tanks (ppm)

BORING NUMBER	DEPTH (FT)	SAMPLE NUMBER	COPPER	LEAD	MERCURY
B-1	0 - 0.5	GPS-1A	153	557	1.18
	6 - 6.5	GPS-1B	4.76	19.2	<0.100
	9.5-10.0	GPS-1C	4.14	4.09	<0.100
B-2	0 - 0.5	GPS-2A	27.5	219	0.414
	6 - 6.5	GPS-2B	33.6	198	0.393
	9.5-10.0	GPS-3C	12.4	23.4	<0.100
B-3	0 - 0.5	GPS-3A	19.4	12.3	0.279
	6 - 6.5	GPS-3B	10.3	25.1	0.229
	9.5-10.0	GPS-3C	3.8	4.28	<0.100
B-4	0 - 0.5	GPS-4A	36.4	348	0.100
	6 - 6.5	GPS-4B	222	917	1.26
	9.5-10.0	GPS-4C	<2.00	20.6	<0.100
B-5	0 - 0.5	GPS-5A	226	937	1.34
	6 - 6.5	GPS-5B	25.4	383	0.696
	9.5-10.0	GPS-5C	11.6	17.9	<0.100
B-6	0 - 0.5	GPS-6A	57.6	457	0.613
	6 - 6.5	GPS-6B	66.4	265	0.809
	9.5-10.0	GPS-6C	10.6	20.6	<0.100
B-7	0 - 0.5	GPS-7A	41.8	264	0.372
	3.5- 4.0	GPS-7B	119	348	1.15
B-8	0 - 0.5	GPS-8A	55.7	378	3.87
	6 - 6.5	GPS-8B	8.14	33.9	0.269
	9.5-10.0	GPS-8C	23.2	7.18	<0.100
B-9	0 - 0.5	GPS-9A	70.5	135	0.908
	6 - 6.5	GPS-9B	12.5	31.1	0.227
	9.5-10.0	GPS-9C	3.44	5.05	<0.100
B-34	0 - 0.5	GPS-34A	38.8	21.3	<0.100
	6.75-7.25	GPS-34B	6.65	7.69	<0.100
	9.5-10.0	GPS-34C	4.07	7.37	<0.100

(PAP-00198877)

According to the *ECRA Cleanup Program ECRA Case #84056B for Georgia-Pacific Corporation*, dated March 2, 1988, polymer extruded products sewer sediment sample (GPS-SS-1) contained copper (90.2 mg/kg), lead (2232 mg/kg) and mercury 0.253 mg/kg) (PAP-00198683).

According to January 1990 *Confirmatory Sampling Results Report for Georgia Pacific Corporation ECRA Case #84056*, prepared by Environmental Consultants, Inc., soil samples collected (0-6 inches bgs) on October 26, 1989, from the Raw Materials Unloading Area contained lead at concentrations of 240 mg/kg in sample RM-1, 160 mg/kg in RM-2, and 120 mg/kg in RM-3 (PAP-00110726). Boring logs associated with the samples describe soils containing bricks, cement chips and sandy fill in RM-1-3 (PAP-00110756-58).

Historic Fill

The Allocation Team has determined that the facility site is not located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PCBs, PAHs, copper, lead and mercury detected at the site in soils are presented in the table below.

COCs found in Historic Fill	
COC	**Max Detected Concentration**
Lead	937 mg/kg
Copper	226 mg/kg
Mercury	13 mg/kg
Benzo(a)anthracene	8.435 mg/kg
Benzo(a)pyrene	73.977 mg/kg
Benzo(b)fluoranthene	49.477 mg/kg
Benzo(k)fluoranthene	49.477 mg/kg
Dibenzo(a,h)anthracene	6.372 mg/kg
Indeno(1,2,3-cd)pyrene	9.639 mg/kg
PCBs	5.25 mg/kg

(PAP-00198634-35; PAP-00106409-10, PAP-00198926-27, PAP-00198695, PAP-00198877)

No information is available regarding when fill materials were placed on the facility site.

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

There is no indication from a review of provided documents that facility operations disturbed contamination located in historic fill.

According to the November 1988 *Cleanup Plan for the Main Plant Area, Georgia Pacific Corporation*, prepared by BCM, fill material was approximately 7 feet thick on the facility and consisted of sand, gravel and brick fragments (PAP-00106325). A Declaration of Environmental Restrictions was applied to a portion of the main plant area on December 2, 1994, where soil contaminated with PAHs had been covered with approximately 10 feet of clean fill material (PAP-00198920).

A Declaration of Environmental Restrictions was made on December 2, 1994, by Georgia-Pacific Corporation in Book 5345 on page 0585 and noted that 10 feet of clean fill material ("Soil Cap") had been placed over the Affected Area (2.187 acres) (PAP-00198920-21).

According to correspondence between Georgia-Pacific Corporation and NJDEP dated 1984, Building #47 was at one point under construction by Celanese (PAP-00109264-67).

5. COC Pathways

Sanitary Sewer

A May 19, 1972, Waste Effluent Survey completed by Celanese reported discharges were sent to the city sewers only with the following water usages (PAP-00105559).

Celanese 290 Ferry Water Usage in gallons			
Reporting Year	***Sanitary Water***	***Storm Sewer***	***Total Water Use***
1971	150,839,000	786,836,000	948,100,000

According to the 1972 PVSC Waste Effluent Survey, the facility had two outfalls to the sanitary sewer that had continuous 24-hour flow, seven days a week with peaks at noon and 4 p.m. on weekdays. Peak rates were estimated at 100 gallons per minute for 20 minutes. The Waste Effluent Survey states that effluent contained no metallic ions and no other COCs (PAP-00105560-61).

Storm Sewer

The January 1921 meeting minutes for the Board of Commissioners of Newark contained an objection to constructing a stormwater sewer to address surplus water in front of the Celluloid Company due to expense. A representative from Balbach Smelting & Refining Company suggested running a small drain down to the "Celluloid plant" (PAP-00111220).

Most facility storm sewers were tied into the PVSC system, except for several at the George Street-Magazine Street-Darcy Street corners that connected to the Magazine Street storm sewer. The Magazine Street storm sewer discharged into manmade

Pierson's Creek (Wilson Avenue) and flowed south toward Doremus Avenue into what is now Newark Bay via the Port Newark Channel (PAP-00198882; PAP-00198879).

According to a September 1982 *Spill Prevention Control and Countermeasure (SPCC) Compliance Inspection* for Georgia-Pacific, there were multiple storm drains along Magazine Street that empty into Pierson's Creek, which flows into Newark Bay (PAP-00198885). It was also noted that due to the proximity of facility storage tanks to local storm drains it is reasonable that oil, in harmful quantities could reach Newark Bay (PAP-00198886; PAP-00198879).

Direct Release

According to the June 30, 1989, *Final Draft Preliminary Assessment Report* (1989 PAR) for Georgia Pacific Corp., prepared by Nus Corporation, the nearest downslope surface water was the Passaic River, located approximately 1,500 feet north of the site. There was no apparent overland migration route from the site to the river because of the intervening roads, railroad tracks, and other urban development. The 1989 PAR report states that runoff from the site most likely entered nearby storm drains, which might discharge into the Passaic River" (PAP-00109277). The 1-year 24-hour rainfall was estimated to be 2.8 inches (PAP-00109278). *The History of the Newark Sewer System* states that 95 percent of homes and businesses were properly sewered by 1919, but all waste still flowed into the Passaic River (PAP-00111240).

Spills

There is no information regarding spills in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

There is no information regarding inspections in the available file material.

Violations

There is no information regarding violations in the available file material.

Permits

There is no information regarding permits in the available file material.

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- *Site Evaluation Submission, NJ Environmental Clean-Up and Responsibility Act, for the Georgia-Pacific Corporation* prepared by The Earth Technology Corporation, April 1984 (PAP-00105944)
- Results of Soil Sampling performed at the Georgia-Pacific Corporation's Polymer Materials Division Newark, August 22, 1984 (PAP-00106076)
- *Revised Soil Sampling and Analysis Program, Georgia Pacific Corporation Newark New Jersey*, February 1986 (PAP-00106191)
- *Revised Sampling and Analysis Program for Georgia Pacific Corporation* prepared by The Earth Technology Corporation, November 1986 (PAP-00106071)
- *Status Report of Cleanup Activities – Main Plant Area for Georgia Pacific Corporation, Newark, NJ,* September 1988 (PAP-00198613)
- *Main Plant Area Georgia Pacific Corporation ECRA Case No. 84056A Cleanup Plan,* November 1988 (PAP-00106299)
- *Preliminary Assessment Final Draft for Georgia Pacific Corp. Newark, NJ*, June 30, 1989 (PAP-00109271)

Remedial Activities

According to the September 1988 *Status Report on Cleanup Activities Main Plant Area for Georgia Pacific Corporation*, prepared by BCM, cleanup activities on site included the excavations of soils from the Building 47 Tank Vault, Courtyard, Underground storage Tanks 15 through 25, Unloading Area (Former Building 46) and Raw Material Unloading Area (PAP-00198614). A description of the cleanup in these areas is provided below with a location map at the end of this section.

<u>Building 47 Tank Vault</u>

The cleanup activities at the Georgia Pacific's Newark facility began with the removal of seven USTs and contaminated soil from a tank vault located in Building 47. Immediately following this removal action, the remaining 18 USTs and associated contaminated soil in the Building 47 courtyard, the alley between Buildings 45 and 43, and the solvent recovery system tank farm adjacent to Building 43 were removed (PAP-00198620). Following the tank and soil removal, the vault floor was decontaminated by pressure washing, and the resultant wastewater from decontamination was collected for offsite disposal (PAP-00198624). All soil and fly ash from the Building 47 Tank Vault was removed from the vault, handled as contaminated material, and later disposed of at Chemical Waste Management's Adams Center Landfill in Fort Wayne, Indiana (PAP-00198624).

Post-excavation soil samples were taken from the trench and analyzed, and PAHs were detected at total concentrations of approximately 14 to 65 mg/kg. No further investigation or remediation was recommended for this area since the PAHs were unrelated to compounds stored and used in the Building 47 vault storage tanks and the PAHs were relatively immobile in the subsurface environment (PAP-00106330).

Building 47 Courtyard

Four 10,000-gallon USTs numbered 8 through 11 and three 5,000-gallon USTs numbered 12 through 14 were located beneath a concrete pavement in the Building 47 courtyard (PAP-00198624). Most of the soils surrounding the tanks on the concrete pad were handled as contaminated soil and removed along with the tanks. The remaining soil on the pad was sampled during the post-excavation sampling effort to confirm that the soil was free of contamination. Preliminary analytical results from soil samples T6, T8, T9, and T10 confirmed that the soil in those areas did not contain significant concentrations of volatile organic compounds or methanol (PAP-00198626).

Wastewaters from tank decontamination operations and rainwater run-off that collected in the excavation were disposed of at DuPont's facility in Deepwater, New Jersey. Most contaminated soils and tank residues were disposed of at Chemical Waste Management's Landfill in Fort Wayne, Indiana. Following tank decontamination, all tanks were cut up and disposed of as scrap metal, at a reclamation facility. The Building 47 Courtyard project began on July 5, 1988, and was completed on August 8, 1988. The excavation was backfilled with clean fill material following receipt of preliminary laboratory results (PAP-00198626).

Six post-excavation soil samples (T1-T6) were taken from the north sidewall of the excavation approximately one foot above the concrete pad. Four additional soil samples were taken from the remainder of the excavation. The post-excavation samples collected on July 29, 1988, contained the following maximum concentrations: benzo(a)anthracene (1.256 mg/kg), benzo(a)pyrene (73.977 mg/kg), benzo(b)fluoranthene (49.477 mg/kg), benzo(k)fluoranthene (49.477 mg/kg), and indeno(1,2,3-cd)pyrene (9.639 mg/kg) in soils (PAP-00106409-10). No additional soil excavation or sampling was recommended in this area since the PAHs associated with the fly ash do not present an environmental concern, as they were not readily mobile in the subsurface environments and were to be covered with clean fill (PAP-00106331-32).

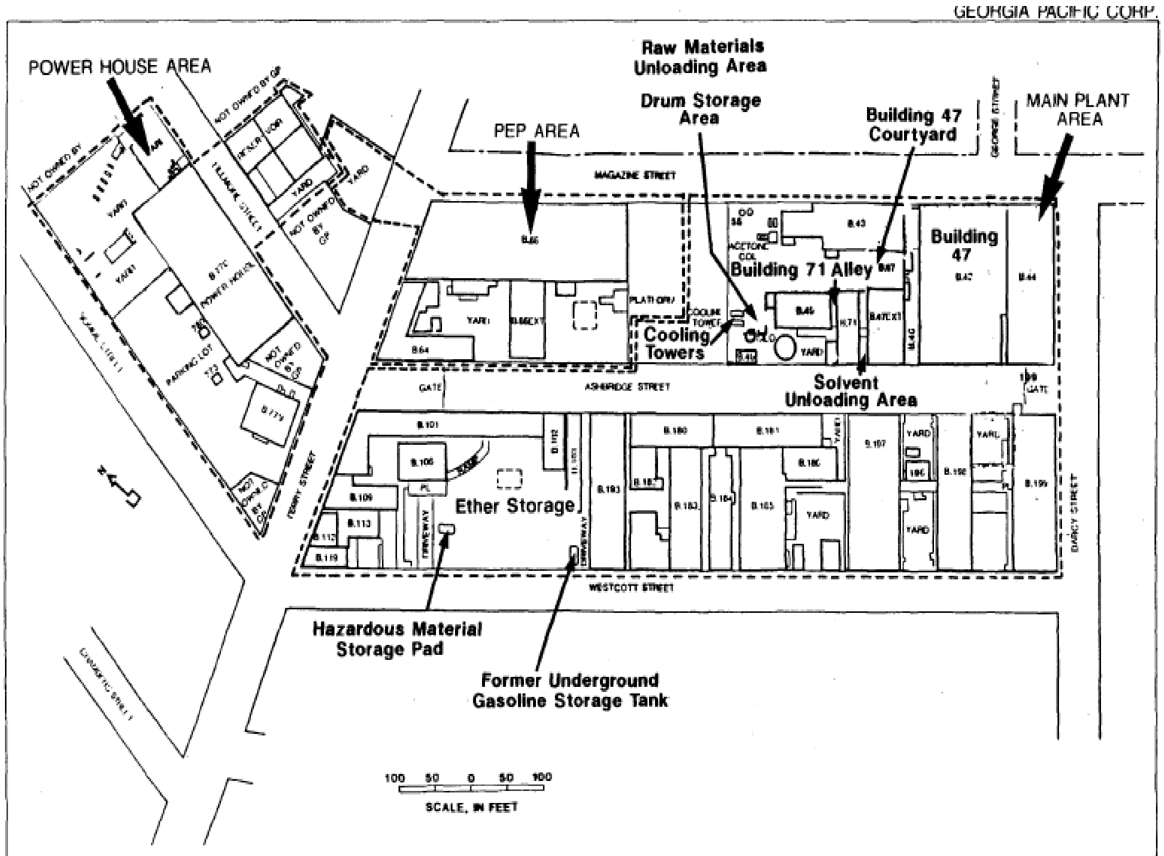
Underground Storage Tanks 15 through 25

UST 15 was located north of the Building 47 Courtyard and adjacent to Building 43. Tanks 16 and 17 were located in the alley between Building 43 and 45 and Tanks 18 through 25 were located adjacent to Building 43 and the solvent recovery system (PAP-00198627). All tank residues were removed, and the tank was decontaminated. After decontamination, the tank was excavated. All accessible contaminated soil adjacent to and below USTs 17 through 25 were removed. The removal of contaminated soil from the area created a large excavation to the water table 10 feet below grade. Preliminary analytical results from sample location 17E indicated that contaminants were still present in the soil. Additional soils in the vicinity of 17E were excavated after receipt of the preliminary analytical results. Additional post-excavation soil samples, labeled 17E2 and 17E2 duplicate, were collected to confirm contaminated soils were excavated (PAP-00198627).

Post-excavation soil samples were taken from 29 locations along the sidewalls of the three excavations and analyzed. The detected PAHs were primarily unrelated to any materials stored or used in the area (PAP-00106332). Post-excavation samples collected on August 24, 1988, from the SRS underground storage tanks area had the reported maximum concentrations: benzo(a)anthracene (6.03 mg/kg), benzo(a)pyrene (7.26 mg/kg), benzo(b)fluoranthene (5.95 mg/kg), benzo(k)fluoranthene (5.95 mg/kg), and indeno(1,2,3-cd)pyrene (1.0 mg/kg) (PAP-00106415-28). No further investigation or soil excavation was recommended at the SRS area since VOCs and semi-volatile detections were at generally acceptable concentrations (PAP-00106332). The PAHs detected were relatively immobile in the subsurface environment and were to be covered with clean fill (PAP-00106333).

Raw Material Unloading Area

Samples S3 and S4 from the 1987 sampling effort demonstrated that the soil below two off-loading pipes in the raw material unloading area between Building 45 and the cooling towers was contaminated with lead (73.1 and 597 mg/kg, respectively (PAP-00198707)), to a depth of 2 ft bgs. The contamination in this area was suspected to be present as a result of raw material unloading activities of (PAP-00198630). Georgia Pacific removed soil from this area creating an excavation 7 feet wide by 9 feet long to a depth of 2 feet below grade. The soil was later disposed of at Thermal Kem. The excavation was to be backfilled with clean fill material following receipt of analytical results (PAP-00198630). A post-excavation sample was collected on September 16, 1988, and analyzed based on the post-excavation sampling results, no additional investigation or remediation was recommended for the raw materials unloading station based on no known materials containing priority pollutant metals were managed at this location. The metal concentrations were similar to metal concentrations detected in other soil samples from this site and probably resulted from the extensive and long-term industrial history of the Newark area (PAP-00106313).



BCM Project No. 00-6006-02

Figure 2
SITE MAP

(PAP-00106348)

According to the 1989 PAR, a recommendation of No Further Remedial Action Planned (NFRAP) was assigned to part of this site (13 acres) due to the absence of any potable supply wells or surface water intakes within 3 miles of the site and the planned ECRA cleanup under the direction of the NJDEP (PAP-00109281).

According to an October 12, 1989, NJDEP letter, no further remediation would be required in the areas where PAHs were present at depth below clean fill. However, additional, limited sampling was required in the area of sample GP-SB-2 to determine if this area was a "hot spot" (PAP-00109262).

According to the November 1989 *Final Cleanup Plan for Georgia Pacific Corporation*, prepared by TRC Environmental Consultants, Inc., Georgia-Pacific has completed a site-wide cleanup of the Newark Facility (PAP-00110278). The cleanup has resulted in the removal of 32 underground tanks, almost 9,000 tons of soil and over 125,000 gallons of groundwater from 16 distinct areas of potential environmental concern (PAP-00110280).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file materials.

Facility Data Report

CNA HOLDINGS LLC

Facility Name, Address and Size: Newark Terminal Facility; 354 Doremus Avenue, Newark, New Jersey; 27 acres (PAP-00025517). The number of employees was not identified in the available file material; operations occurred 24 hours a day, seven days a week (PAS-00070991).

1. **Business Type:** Chemical storage and transfer facilities (PAP-00025518-19)

2. **Time Period of Ownership/Operations**

Operator: 1954 to 1996
Owner: 1954 to 1996

1954: Celanese Corporation of America purchased the eastern portion of the site (subsequently referred to as the East Farm) from The Texas Company in 1954 (PAP-00021036; PAS-00070968; PAS-00070886). That same year, Celanese Corporation of America sold the property to The Prudential Insurance Company of America (Prudential Insurance), and began leasing the property from Prudential Insurance in 1954 (PAS-00070886).

1957: Celanese Corporation of America purchased several additional lots in 1957, 1966, and 1975, (including Lots 10 and 12 from the Newark Housing Authority) forming what was subsequently referred to as the West Farm of the site (PAS-00070968; PAP-00022174; PAP-00021039; PAS-00070968).

1980: Celanese Chemical Company, Inc., a subsidiary of Celanese Corporation of America, purchased the East Farm from Prudential Insurance (PAS-00070886; PAS-00070927-29).

1987: American Hoechst and Celanese Corporation of American merged to form Hoechst Celanese Corporation (PAS-00070886).

1988: Celanese Chemical Company, Inc. changed its name to Hoechst Celanese Chemical Group, Inc. in 1988 (PAS-00070886).

1995: Hoechst Celanese Chemical Group, Inc., merged with Hoechst Celanese Chemical Group, Ltd. (PAS-00070935). Hoechst Celanese Chemical Group, Ltd., is an affiliate of Hoechst Celanese Corporation (formerly Celanese Chemical Company, Inc.) (PAS-00070968). On December 31, 1995, ownership of the property was transferred to Hoechst Celanese Chemical Group, Ltd. (Celanese), a limited partnership comprised of Hoechst Celanese Texas Holdings, Inc. as general partner and Hoechst Celanese Chemicals, Inc. as limited partner (PAS-00070886). Hoechst Celanese Chemical Group, Inc. was the previous owner/operator (PAS-00070979).

1996: Operations ceased in July 1996 (PAS-00070968).

1998: Essex County Improvement Authority, an entity of the State of New Jersey, acquired the site on September 17 (PAP-00022169-93).

3. Operational History/COC Use and Presence at the Facility

According to the *Sampling Plan*, dated June 1987, the site consisted of two areas: the East Farm, a 7.5-acre lot situated east of Doremus Avenue and abutting Newark Bay; and, the West Farm, a 19.3-acre lot located west of Doremus Avenue (PAP-00021031). The facility was primarily used as a storage and transfer terminal for products manufactured at other off-site Celanese facilities. The products stored and transferred on-site included organic acids, acrylates, acetates, and glycols (PAP-00021143; PAP-00021031).

Chemicals arrived via tanker (water), tank car (railroad), and tank truck and were loaded into aboveground storage tanks via aboveground pipes. Outgoing chemicals were shipped to customers by tank truck and railroad tank cars. According to the *Sampling Plan*, dated June 1987, the loading areas were paved and fitted with drainage containment systems (PAP-0021032). As chemicals were transferred to storage tanks, chemical vapors were captured and scrubbed by a caustic solution that was then discharged to the sewer system (PAS-00071000).

In addition to its chemical transfer operations, Celanese manufactured formaldehyde and potassium acrylate on the West Farm (PAP-00021032). Celanese manufactured formaldehyde from approximately 1966 to April 1993, and it manufactured potassium acrylate for approximately one year between 1985 and 1986 (PAS-00070970). These products were manufactured as follows:

- Formaldehyde was produced by oxidizing methanol and purifying the product in an ion-exchange process. The formaldehyde solution was then transferred to the East Farm and blended with methanol to form various products. Wastes created in the formaldehyde production process were paraformaldehyde (a solid polymeric form of formaldehyde) which was filtered from solution, sulfuric acid and sodium hydroxide wastes from the ion exchangers, rinse solutions from cleaning the filters, and formaldehyde vapors. The vapors were sent to a scrubber, while the other wastes were flushed to the permitted sewer system (PAP-00021032).

- Potassium acrylate production involved the reaction of glacial acrylic acid with potassium hydroxide, and subsequent chilling (PAP-00021032).

According to the *Sampling Plan*, dated June 1987, a drumming operation also took place through January 1987 in the northern section of the East Farm warehouse where approximately 10,000 to 12,000 drums were filled each year with acrylates, acetates, and glycols. The filled drums were stored in the West Farm warehouse prior to shipment by truck to customers (PAS-00070971). Site drainage plans showed that floor drains from the drumming operation in Building B-1 were connected to the sewer system (PAP-00021038). The floor drains may have received discharges of acrylates, acetates and glycols beginning prior to 1965 and continuing until 1987 (PAS-00070972-73).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, dilute wastewaters containing “small amounts” of chemicals were discharged to the Passaic Valley Sewerage Commission (PVSC) system from 1966 to 1993 (PAS-00070971). This included paraformaldehyde-containing residues rinsed from filters, traces of formaldehyde and formic acid resulting from flushing of the ion exchange units, and traces of potassium acrylate generated during cleaning of potassium acrylate manufacturing equipment (PAS-00070970). In addition to manufacturing-related wastewaters, sanitary wastewater from lavatories, non-contact cooling water used in reactors in the methanol oxidation units, and wastewaters resulting from stripping of exhaust gases in the scrubbers were discharged to the PVSC system (PAS-00070972).

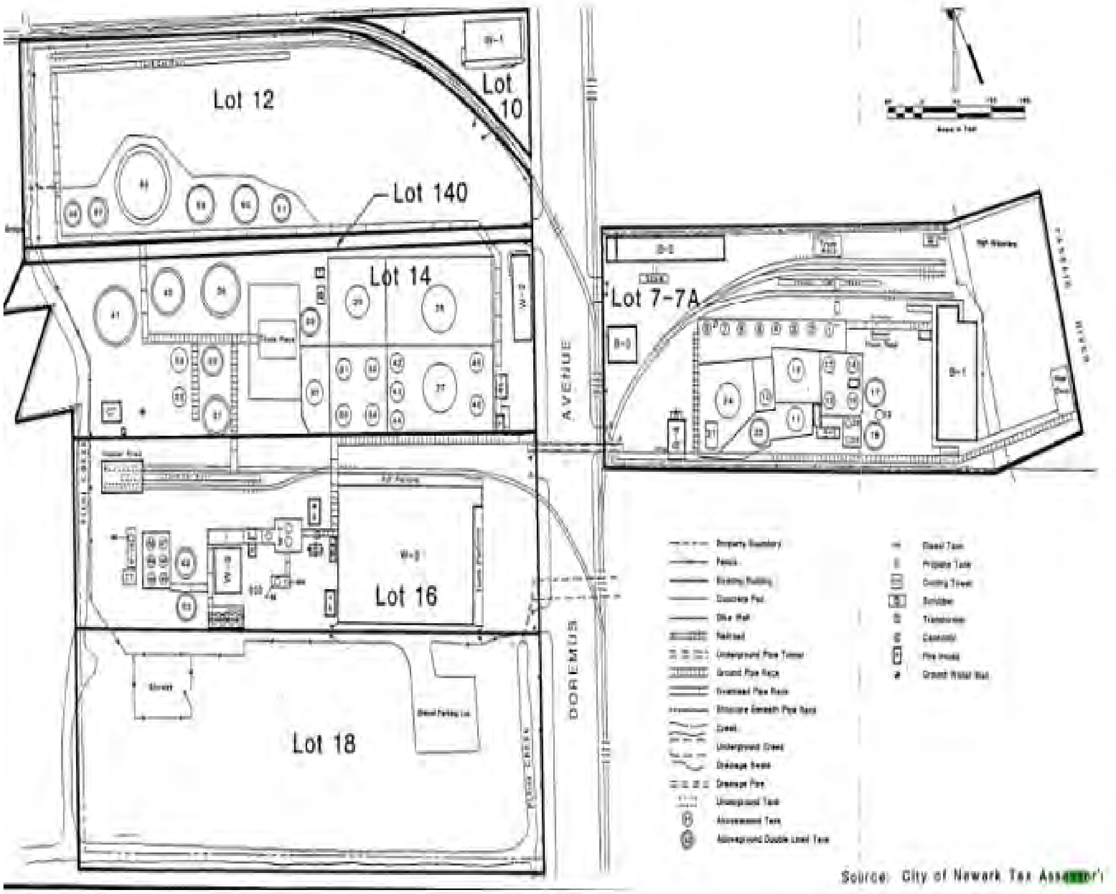
The only available documentation of OU2 contaminant of concern (COC) use or handling associated with Celanese operations are as follows:

- According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd*., dated October 18, 1996, the site had two aboveground storage tanks that held No. 6 fuel oil; one with a 63,000-gallon capacity and one with a 17,000-gallon capacity (PAS-00071012).

- According to waste disposal records from 1991, a waste shipment for off-site disposal was returned when laboratory analysis showed one drum of waste sump water contained >50.1 parts per million (ppm) and one drum of PCB lean water contained >37.2 ppm polychlorinated biphenyls (PCBs) (PAS-00071050; PAS-00071299-300). The source of the waste was not available in the referenced document. According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd*., dated October 18, 1996, three transformers were previously located at the site (removed in 1996); no PCBs were detected in the transformer fluid at the time of removal (PAS-00070977).

- The facility disposed of one shipment of five pounds of mercury and one shipment of 10 pounds of mercury in July 1996 during decommissioning activities (PAS-00071647; PAS-00071649).

A facility layout is depicted below.



(PAP-00021035)

4. Identified COCs

- PCBs (detected)
- PAHs (used, detected)
- DDx (detected)
- Mercury (detected)
- Copper (detected)
- Lead (detected)

PCBs

According to waste disposal records from 1991, a waste shipment for off-site disposal was returned when laboratory analysis showed one drum of waste sump water contained >50.1 ppm and one drum of PCB lean water contained >37.2 ppm PCBs (PAS-00071050; PAS-00071299-300). The source of the waste was not available in the referenced document. According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, three Public Service Electric & Gas (PSE&G) transformers were previously located at the site (removed in 1996); no PCBs were detected in the transformer fluid at the time of removal (PAS-00070977).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, PCBs were detected in surface soil collected adjacent to the concrete pad that previously held three PSE&G transformers in the West Farm (PAS-00070977). Detected PCB concentrations ranged from 0.16 ppm to 30 ppm. It is noted that this area was located adjacent to a grated storm drain (PAS-00072608). According to the *Sampling Plan*, dated June 1987, collection sumps, floor drains, dike wall drainage valves, and the connecting drainage and sewage lines service the facility and all potentially contaminated runoff is directed to the sewer system (PAP-00021041-042).

In 1981, Aroclor 1254 was detected in a sample of "East Farm Effluent" [0.2 micrograms per liter (µg/L)] and "West Farm Effluent" (0.1 µg/L). All other PCB Aroclors in the sample were non-detect at 0.1 µg/L. (PAS-00071087). No other wastewater monitoring data for OU2 COCs were identified in the available file material.

Plum Creek, a small drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). PCBs were detected as follows in concentrations of parts per billion (ppb) (PAS-00072645-49, 56):

Range of PCB Concentrations Reported in Plum Creek		
COC	**Sediment (ppb)**	**Surface Water (ppb)**
PCBs	1,200 – 9,200	15

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

PAHs

It is noted that the East Farm was originally owned by the Texas Company (Texaco), which operated a petroleum distribution facility on the site from approximately 1925 until 1954 (PAP-00021036).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd*., dated October 18, 1996, the site had two aboveground storage tanks that held No. 6 fuel oil; one with a 63,000-gallon capacity and one with a 17,000-gallon capacity (PAS-00071012). In addition, PAHs were a component of heavy fuel oil that was used for boiler operation prior to the 1990s (PAP-0021397, PAP-0021339).

In 1981, naphthalene was detected in a sample of “East Farm Effluent” (21 µg/L) and “West Farm Effluent” (11 µg/L). The “Water Supply” sample had a naphthalene concentration of 1-9 µg/L (PAS-00071086). No other wastewater monitoring data for OU2 COCs were identified in the available file material.

Plum Creek, a small drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). High and low molecular weight polynuclear aromatic hydrocarbons (PAHs) were detected in sediment and surface water samples (PAS-00072650-52). PAHs were detected at their highest concentrations in the sample collected upstream of the site (PAP-00026235). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

DDx

No records related to use or handling of dichlorodiphenyldichloroethane (4,4-DDD) or dichlorodiphenyldichloroethylene (4,4-DDE) were identified in the available file material.

In 1981, the “East Farm Effluent” and the “West Farm Effluent” were sampled. Pesticides were non-detect at 0.1 µg/L in the samples (PAS-00071087).

Plum Creek, a small drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). 4,4-DDE was detected as follows (PAS-00072645-49, 56):

Range of 4,4-DDE Concentrations Reported in Plum Creek		
COC	**Sediment (ppb)**	**Surface Water (ppb)**
4,4-DDE	450 – 500	0.02 – 0.07

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill

material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

According to a *Remedial Action Report, Buried Paint Waste-Contaminated Soils*, Essex County Correctional Facility, dated October 1999, during redevelopment of the site by the Essex County Improvement Authority in early December 1998, buried paint waste, as well as buried crushed drums, were discovered during excavation at the Retention Pond "D" area located in the northwest corner of the site on Lot 12, along Plum Creek (PAP-00023857). In the shallowest soil sample collected in this area (1.0 feet), 4,4-DDE [0.058 milligrams per kilogram (mg/kg)] and 4,4-DDD (0.018 mg/kg) were detected (PAP-00023872-78). The paint-waste impacted fill on Lot 12 (approximately 1,900 cubic yards) is consistent with third-party dumping that occurred while Lot 12 was owned by the Newark Housing Authority (PAP-00026335).

Copper

No records related to use or handling of copper were identified in the available file material.

In 1981, the “East Farm Effluent” and the “West Farm Effluent” were sampled. Copper was non-detect at 0.02 mg/L in the samples (PAS-00071088).

Plum Creek, a small drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). Copper was detected as follows (PAS-00072645-49, 56):

Range of Copper Concentrations Reported in Plum Creek		
COC	**Sediment (ppb)**	**Surface Water (ppb)**
Copper	57,600 – 660,000	11 - 33

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, metals were detected above the “action levels” at sediment sampling locations on Plum Creek both upstream of and adjacent to the site (PAP-00026226). It states that many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

Lead

No records related to use or handling of lead were identified in the available file material. However, according to a *Remedial Action Report, Buried Paint Waste-Contaminated Soils*, Essex County Correctional Facility, dated October 1999, during redevelopment of the site by the Essex County Improvement Authority in early December 1998, buried paint waste, as well as buried crushed drums, were discovered during excavation at the Retention Pond "D" area located in the northwest corner of the site on Lot 12, along Plum Creek (PAP-00023857). The paint-waste impacted fill on Lot 12 (approximately 1,900 cubic yards) is consistent with third-party dumping that occurred while Lot 12 was owned by the Newark Housing Authority (PAP-00026335). In the shallowest soil sample collected in this area (1.0 feet), lead (810 mg/kg) was detected (PAP-00023872-78).

In addition, according to a letter prepared by NJDEP, dated May 1, 2000, a second area of buried paint waste was identified in the southern portion of Lot 18 near Plum Creek during site redevelopment activities in 1998 (PAP-00023838).

In 1981, the “East Farm Effluent” and the “West Farm Effluent” were sampled. Lead was non-detect at 0.1 mg/L in the samples (PAS-00071088).

Plum Creek, a small drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). Lead was detected as follows (PAS-00072645-49, 56):

Range of Lead Concentrations Reported in Plum Creek		
COC	**Sediment (ppb)**	**Surface Water (ppb)**
Lead	338,000 – 1,950,000	21 - 180

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, metals were detected above the “action levels” at sediment sampling locations on Plum Creek both upstream of and adjacent to the site, and lead was detected in surface water above the “action level” in the upstream sample (PAP-00026226). It states that many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

Mercury

The facility disposed of one shipment of five pounds of mercury and one shipment of 10 pounds of mercury in July 1996 during decommissioning (PAS-00071647; PAS-00071649). The source of the waste was not available in the referenced document.

In 1981, mercury was detected in a sample of "West Farm Effluent" [0.0006 milligrams per liter (mg/L)]. It is noted that this concentration is less than that detected in the "Water Supply" sample (0.0020 mg/L) (PAS-00071088). No other wastewater monitoring data for OU2 COCs were identified in the available file material.

Plum Creek, a small drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). Mercury was detected as follows (PAS-00072645-49, 56):

Range of Mercury Concentrations Reported in Plum Creek		
COC	**Sediment (ppb)**	**Surface Water (ppb)**
Mercury	200 – 3,200	Non-detect

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, metals were detected above the "action levels" at sediment sampling locations on Plum Creek both upstream of and adjacent to the site (PAP-00026226). It states that many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

Historic Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[1]

NJDEP has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and

[1]*Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).

mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

According to the *Sampling Plan*, dated June 1987, at the surface, miscellaneous fill placed to bring the land surface above sea level was found to a maximum depth of 15 feet. This material consisted of rubble, construction debris, soil mixed with cinders and wood, and varying amounts of silts and gravel (PAP-00021044). The *Remedial Action Report for Soils and Proposal for Institutional and Engineering Controls*, dated May 1996, goes on to state that between 5 and 14 feet of historical fill materials covered the entire site, and that the physical character, distribution and chemical composition of the fill was documented in all major reports submitted to the New Jersey Department of Environmental Protection (NJDEP) (PAP-00021428).

According to a *Preliminary Assessment Report for Block 5060, Lots 10, 12, 14, 16, 18, 106, 116, and 140 and Block 5070, Lots 7 and 7a*, dated May 1, 1996, historical aerial photographs show that the site had been filled by 1947 (PAP-00021345).

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00023872-78; PAS-00072548, 49, 51).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	24,700 mg/kg
Copper	5,980 mg/kg
Mercury	12 mg/kg
Benzo(a)anthracene	47 mg/kg
Benzo(a)pyrene	20 mg/kg
Benzo(b)fluoranthene	21 mg/kg
Benzo(k)fluoranthene	5.8 mg/kg
Dibenzo(a,h)anthracene	1.5 mg/kg
Indeno(1,2,3-cd)pyrene	9.6 mg/kg

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

5. COC Pathways

The site is situated on the west bank of Newark Bay, across from the tip of Kearny Point where the Passaic and Hackensack Rivers join to form Newark Bay (PAP-00021030). Plum Creek, a small tidal drainage stream, flows along the western and southern edges of the West Farm. The stream reaches Newark Bay after being diverted underground beneath a neighboring facility (PAP-00021031). Plum Creek drains several neighboring sites upstream of the Celanese site and is also tidally influenced (PAP-00021048).

Sanitary and Storm Sewer

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, dilute wastewaters containing "small amounts" of chemicals were discharged to the PVSC system from 1966 to 1993 (PAS-00070971). This included paraformaldehyde-containing residues rinsed from filters and traces of formaldehyde and formic acid resulting from flushing of the ion exchange units and traces of potassium acrylate (PAS-00070970). In addition to manufacturing-related wastewaters, sanitary wastewater from lavatories, non-contact cooling water used in reactors in the methanol oxidation units, and wastewaters resulting from stripping of exhaust gases in the scrubbers were discharged to the PVSC system (PAS-00070972).

In addition, according to the *Sampling Plan*, dated June 1987, surface drainage was provided by a network of impoundment areas and collection sumps, which also discharged to the PVSC sewer. A portion of stormwater runoff entered the sewer via various sumps and catch pans. Diked and paved tank farms were drained by valves and sumps; unpaved areas drained by surface infiltration (PAP-00021042).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd*., dated October 18, 1996, the PVSC first issued a sewer discharge permit to the facility on June 16, 1982 (Permit No. 20401052) (PAS-00070968). A copy of the permit was not identified in the available file material.

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd*., dated October 18, 1996, the site's effluent entered the PVSC system through one pipe on the East Farm and two pipes on the West Farm. One of the West Farm pipes received only the sanitary wastes from the main offices; the other two pipes discharged water from plant operations (PAS-00071098).

According to a *Selected Substance Report*, dated May 27, 1980, the average volume of wastewater discharged to the PVSC system was 50,000 gallons per day (PAS-00071742). According to discharge monitoring reports identified in the available file material, the following volumes of wastewater were discharged to the PVSC system in 1986 and 1991 (PAS-00071072-80; 238-39):

Wastewater Discharge Volumes		
Date	**Outfall 20401051 (gallons)**	**Outfall 20401052 (gallons)**
January 1st – March 31st 1986	1,866,370	4,112,230
April 1st – June 30th 1986	2,801,470	4,345,570
July 1st – September 30th 1986	1,586,200	936,510
October 1st – December 31st 1986	803,560	2,747,630
Date	**Outfall 20405611**	**Outfall 20405612**
April 1st – June 30th 1991	2,858,040	556,033

According to the *Sampling Plan*, dated June 1987, the sewer discharge is conveyed to the PVSC treatment works located approximately one mile south of the site on Doremus Avenue (PAP-00021042). Based on an undated site plan of sanitary and combined sewer configurations, along this short stretch of sewer between the facility and the PVSC treatment works, there are no outfalls to the Passaic River (PAP-00020848).

Direct Release

According to the *Sampling Plan*, dated June 1987, surface drainage was provided by a network of impoundment areas and collection sumps, which discharged to the PVSC sewer. A portion of stormwater runoff entered the sewer via various sumps and catch pans. Diked and paved tank farms were drained by valves and sumps; unpaved areas drained by surface infiltration. All other un-channeled rainwater runoff flowed into the natural drainage of Plum Creek or the Passaic River, or infiltrated into the ground (PAP-00021042). Due to extensive paving, most undirected runoff on the East Farm discharged to the Passaic River; because much of the West Farm was unpaved, it was reported that direct percolation into the soil occurred frequently. On the West Farm un-channeled stormwater drained westward to Plum Creek (PAS-00071091-92).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, a New Jersey Pollutant Discharge Elimination System (NJPDES) General Permit for the facility's stormwater discharges was issued on May 19, 1993 (Permit No. 0088315) (PAS-00070969). A copy of the permit was not identified in the available file material.

Spills

According to the *Sampling Plan*, dated June 1987, older Celanese employees related that in the mid-1970s, persons were sometimes seen dumping materials into Plum Creek north of the northwest corner of the Celanese property. Most of this activity occurred at night. Employees stated that a certain material deposited was a thick white liquid (PAP-00021048). It is unclear if these materials had the potential to contain OU2 COCs based on review of available file material.

On March 29, 1984, approximately 300 gallons of No. 6 fuel oil were released in the diked tank farm on the East Farm when Tank 21 was accidentally overfilled (PAS-00071104-105). Sampling data associated with this spill were not identified in the available file material.

In 1985, approximately 2,000 gallons of No. 6 fuel oil discharged from Tank 21. Approximately 125 tons of contaminated soil were removed from the area around the tank and disposed off-site (PAS-00071105). Sampling data associated with this spill were not identified in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

There is no information regarding inspection in the available file material.

Violations

According to an Order, dated August 15, 1969, issued by the Department of Health of the State of New Jersey, Celanese was found to be discharging industrial waste and “other polluting matter” into the Passaic River, and was ordered to install and provide wastewater treatment and/or disposal facilities, and cease and desist discharging its industrial waste or other polluting matter from any sewer or drain into the waters of the Passaic River (PAS-00071180-81). It is unclear if OU2 COCs were associated with these discharges.

Subsequent to the 1988 Celanese Chemical Company, Inc. merger into Hoechst Celanese Chemical Group, Inc., the NJDEP initiated an *Administrative Consent Order* requiring implementation of a cleanup plan at the site (PAP-00021935-38).

On May 17, 1991, the facility received a Notice of Violation for failure to monitor their effluent for lead to comply with General Pretreatment Regulations. The letter states that lead must be tested for unless specifically exempted (PAS-00071202).

Permits

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd*., dated October 18, 1996, the PVSC first issued a sewer discharge permit to the facility on June 16, 1982 (Permit No. 20401052) (PAS-00070968).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, a NJPDES General Permit for the facility's storm water discharges was issued May 19, 1993 (Permit No. 0088315) (PAS-00070969).

Copies of these permits were not identified in the available file material.

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989 (PAP-00026142);
- *Results of Phase II ECRA Sampling Plan and Proposed Phase III Investigation*, dated September 1990 (PAP-00020849);
- *Results of Phase III ECRA Sampling Plan*, dated February 1992 (PAP-00021150); and,
- *Remedial Action Report for Soils and Proposal for Institutional and Engineering Controls*, dated May 1996 (PAP-00021405).

Sewer

In 1981, the "East Farm Effluent" and the "West Farm Effluent" were sampled. Aroclor 1254 was detected in a sample of "East Farm Effluent" (0.2 µg/L) and "West Farm Effluent" (0.1 µg/L). All other PCB Aroclors in the sample were non-detect at 0.1 µg/L. (PAS-00071087). Naphthalene was detected in a sample of "East Farm Effluent" (21 µg/L) and "West Farm Effluent" (11 µg/L). The "Water Supply" sample had a naphthalene concentration of 1-9 µg/L (PAS-00071086). Mercury was detected in a sample of "West Farm Effluent" (0.0006 mg/L). It is noted that this concentration is less than that detected in the "Water Supply" sample (0.0020 mg/L) (PAS-00071088). No pesticides, copper, or lead were detected in the samples (PAS-00071087-88).

Plum Creek

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.*, dated April 1989, 15 sediment and seven surface water samples were collected from Plum Creek in 1988 (PAP-00026225-26). The table below presents the range of OU2 COCs detected in sediment and surface water (PAS-00072645-49, 56):

Range of OU2 COC Concentrations Reported in Plum Creek		
COC	**Sediment (ppb)**	**Surface Water (ppb)**
Copper	57,600 – 660,000	11 - 33
Lead	338,000 – 1,950,000	21 - 180
Mercury	200 – 3,200	Non-detect
PCBs	1,200 – 9,200	15
4,4-DDE	450 – 500	0.02 – 0.07

High and low molecular weight PAHs were also detected in sediment and surface water samples (PAS-00072650-52) as follows:

Sample	Compound	Conc. (ppb)	Flag
	PLUM CREEK SEDIMENT SAMPLES		
700A-4001-SD01	Acenaphthene	1500	
700A-4001-SD01	Fluorene	1600	
700A-4001-SD01	Phenanthrene	9100	
700A-4001-SD01	Anthracene	2600	
700A-4001-SD01	Fluoranthene	13000	
700A-4001-SD01	Pyrene	4100	
700A-4001-SD01	Naphthalene	3000	
700A-4001-SD01	Benzo(a)Anthracene	3000	
700A-4001-SD01	bis(2-ethylhexyl)phthalate	5900	
700A-4001-SD01	Chrysene	3200	
700A-4001-SD01	Benzo(b)Fluoranthene	2600	
700A-4001-SD01	Benzo(a)Pyrene	2700	
700A-4001-SD01	Indeno(1,2,3-cd)Pyrene	1800	
700A-4001-SD01	Dibenz(a,h)Anthracene	550	J
700A-4001-SD01	Benzo(g,h,i)Perylene	1700	
700A-4002-SD01	Phenanthrene	1400	
700A-4002-SD01	Fluoranthene	3200	
700A-4002-SD01	Pyrene	1100	
700A-4002-SD01	bis(2-ethylhexyl)phthalate	47000	
700A-4002-SD01	Chrysene	870	J
700A-4002-SD01	Benzo(b)Fluoranthene	540	J
700A-4002-SD01	Benzo(a)Pyrene	41	J
700A-4003-SD01	Phenanthrene	240	J
700A-4003-SD01	Pyrene	440	
700A-4003-SD01	Naphthalene	120	J
700A-4003-SD01	Benzo(a)Anthracene	310	J
700A-4003-SD01	bis(2-ethylhexyl)phthalate	5000	
700A-4003-SD01	Chrysene	410	
700A-4003-SD01	Benzo(b)Fluoranthene	390	J
700A-4003-SD01	Benzo(a)Pyrene	260	
700A-4004-SD01	Phenanthrene	3800	
700A-4004-SD01	Anthracene	1300	
700A-4004-SD01	Fluoranthene	3600	
700A-4004-SD01	Pyrene	2900	
700A-4004-SD01	Naphthalene	370	J
700A-4004-SD01	Benzo(a)Anthracene	2300	
700A-4004-SD01	bis(2-ethylhexyl)phthalate	77000	
700A-4004-SD01	Chrysene	2800	
700A-4004-SD01	Benzo(b)Fluoranthene	1500	
700A-4004-SD01	Benzo(k)Fluoranthene	1400	

Sample	Compound	Conc. (ppb)	Flag
700A-4004-SD01	Benzo(a)Pyrene	1900	
700A-4004-SD01	Indeno(1,2,3-cd)Pyrene	1100	
700A-4004-SD01	Acenaphthylene	1400	
700A-4004-SD01	Benzo(g,h,i)Perylene	1100	
700A-4005-SD01	Fluoranthene	380	J
700A-4005-SD01	Pyrene	140	J
700A-4005-SD01	Benzo(a)Anthracene	270	J
700A-4005-SD01	bis(2-ethylhexyl)phthalate	1300	
700A-4005-SD01	Chrysene	270	J
700A-4005-SD01	Benzo(b)Fluoranthene	140	J
700A-4005-SD01	Benzo(a)Pyrene	140	J
700A-4006-SD01	Acenaphthene	1100	
700A-4006-SD01	Fluorene	1500	
700A-4006-SD01	Phenanthrene	12000	
700A-4006-SD01	Anthracene	3200	
700A-4006-SD01	Fluoranthene	14000	
700A-4006-SD01	Pyrene	10000	
700A-4006-SD01	Naphthalene	950	
700A-4006-SD01	Benzo(a)Anthracene	6600	
700A-4006-SD01	bis(2-ethylhexyl)phthalate	1500	
700A-4006-SD01	Chrysene	7300	
700A-4006-SD01	Benzo(b)Fluoranthene	4300	
700A-4006-SD01	Benzo(k)Fluoranthene	4400	
700A-4006-SD01	Benzo(a)Pyrene	5100	
700A-4006-SD01	Indeno(1,2,3-cd)Pyrene	2600	
700A-4006-SD01	Dibenz(a,h)Anthracene	990	J
700A-4006-SD01	Acenaphthylene	1100	J
700A-4006-SD01	Benzo(g,h,i)Perylene	2500	
700A-4007-SD01	Phenanthrene	570	J
700A-4007-SD01	Fluoranthene	1600	
700A-4007-SD01	Pyrene	570	J
700A-4007-SD01	Benzo(a)Anthracene	630	J
700A-4007-SD01	bis(2-ethylhexyl)phthalate	1700	
700A-4007-SD01	Chrysene	760	J
700A-4007-SD01	Benzo(b)Fluoranthene	440	J
700A-4007-SD01	Benzo(a)Pyrene	540	J
700A-4007-SD01	Indeno(1,2,3-cd)Pyrene	440	J
700A-4007-SD01	Acenaphthylene	320	J
700A-4007-SD01	Benzo(g,h,i)Perylene	350	J

Only naphthalene was detected in surface water at a maximum concentration of 5 ppb (PAS-00072650-52).

According to the *Presentation of ECRA Phase I Sampling Results and Proposed Phase II Sampling Plan for Hoechst Celanese Chemical Group, Inc.,* dated April 1989, many of the compounds detected in Plum Creek sediment and surface water have apparent off-site sources located upstream of the site or appear to reflect the composition of the fill material at the site. The report goes on to state that because the levels of contaminants at most locations were de minimis relative to action levels and because several contaminants found in both the surface water and sediment on site have apparent off-site sources, Plum Creek was not recommended for further investigation (PAP-00026302).

Soil

According to a *Remedial Action Report for Soils and Proposal for Institutional and Engineering Controls*, dated May 1996, soil samples were collected from numerous on-site test pits in 1988 to characterize the site. PCBs were detected at a concentration of 54 ppm in a sample collected at a depth of three feet below ground surface (bgs). The sample was collected from test pit TP-1, which was located in a non-operational area in the south-central portion the southern portion of the West Farm. The purpose of TP-1 was to characterize the historical fill materials in this area and to collect samples representing background soil conditions. PCBs were not detected at a depth of 0.5 feet bgs (PAP-00021424-26).

According to the *Response to Request for Information Hoechst Celanese Chemical Group Ltd.*, dated October 18, 1996, PCBs also were detected in surface soil collected in the area of three transformers in the West Farm that were owned and operated by PSE&G (PAS-00070977). Detected PCB concentrations ranged from 0.16 ppm to 30 ppm. It is noted that this area was located adjacent to a grated storm drain (PAS-00072608).

According to the *Results of Phase II ECRA Sampling Plan and Proposed Phase III Investigation*, dated September 1990, additional sampling was conducted to delineate soil contamination in 1990. Note that the concentrations of metals were reported in “µg/kg” as opposed to “mg/kg” as is typical. The table below presents the range of OU2 COCs detected in surface soil (zero to 0.5 feet bgs or 0.5 to one foot bgs) by area of environmental concern (AEC) (PAP-00020912-13, 45-47, 50, 55-56):

Range of OU2 COC Concentrations Reported in Surface Soil in 1990 (mg/kg)			
AEC	**Copper**	**Lead**	**Mercury**
AEC 11: Former Jan Packaging Area, located in northern section of West Farm where former owner, Jan Packaging, operated a chemical packaging facility	104 - 353	Not Reported	0.17 - 1.28
AEC 34: West Farm Drainage Ditch, a drainage ditch which receives stormwater runoff from a product storage area in the West Farm	144	409	1.1 mg/kg
AEC 36: Former Land Disposal Area, located in western portion of Lot 18, filled with construction debris and possibly filter solids from the formaldehyde production process	75.9 - 447	179 - 3,670	0.56 - 1.76

High and low molecular weight PAHs were also detected in surface soil at the following AECs:

- AEC 11
- AEC 12 – small area of stained soil located beneath an overhead pipe rack in the northwestern portion of the site
- AEC 17 – cooling water discharge area in West Farm
- AEC 21 – small area of stained soil beneath a pipe rack in the west-central portion of the West Farm
- AEC 28 – area of potential floor drain discharge from West Farm warehouse
- AEC 33 – suspected paraformaldehyde fill area in southwest portion of West Farm
- AEC 34
- AEC 36
- AEC 51 – former sink discharge pipe in East Farm
- AEC 57 – former ethyl acetate and acrylic acid spill area in East Farm
- AEC 59 – decommissioned underground sump tank location in the vicinity of the East Farm truck loading area (PAP-00020912-13, 17-18, 21, 24, 27, 29, 31, 42-43, 45-47, 50, 55-56, 77-78, 80, 83, 84, 87).

Maximum concentrations of PAHs in surface soil (0.5 to 1 foot bgs) were detected at AEC 59 (in ppb) (PAP-00020987):

Base/Neutral Compounds	
Acenaphthene	18000.00
Acenaphthylene	1400.00
Anthracene	40000.00
Benzo(a)Anthracene	82000.00
Benzo(a)Pyrene	62000.00
Benzo(b)Fluoranthene	68000.00
Benzo(g,h,i)Perylene	45000.00
Benzo(k)Fluoranthene	29000.00
bis(2-ethylhexyl)phthalate	7900.00 B(B=18)
Chrysene	77000.00
Di-n-Butylphthalate	ND
Dibenz(a,h)Anthracene	18000.00
Fluoranthene	91000.00
Fluorene	26000.00
Indeno(1,2,3-cd)Pyrene	40000.00
N-Nitrosodiphenylamine (1)	1500.00
Naphthalene	19000.00
Phenanthrene	95000.00
Pyrene	110000.00

It was concluded that metals and base neutral detections (i.e., PAHs) in some areas were associated with historic fill materials (exceptions being at AEC 51 and AEC 59 where PAH contamination was not attributed to fill) (PAP-00021328; PAP-00026097; PAP-00026112, 15).

According to the *Results of Phase III ECRA Sampling Plan*, dated February 1992, additional sampling was conducted to delineate soil contamination in 1991 (PAP-00021156-57). The table below presents the range of OU2 COCs detected in surface soil (zero to 0.5 feet bgs) by AEC (PAP-00021192-194, 199-201):

Range of OU2 COC Concentrations Reported in Surface Soil in 1991 (mg/kg)			
AEC	**Copper**	**Lead**	**Mercury**
AEC 11: Former Jan Packaging Area, located in northern section of West Farm where former owner, Jan Packaging, operated a chemical packaging facility	49 – 330	Not Reported	0.1 – 1.1
AEC 36: Former Land Disposal Area, located in western portion of Lot 18, filled with construction debris and possibly filter solids from the formaldehyde production process	Not Reported	1,600 – 1,900	Not Reported

High and low molecular weight PAHs also were detected in surface soil at AEC 11, AEC 36 (PAP-00021192-194, 199-201). It was concluded that metals and base neutral detections (i.e., PAHs) were associated with historic fill materials (PAP-00021328; PAP-00026097).

According to a *Remedial Action Report, Buried Paint Waste-Contaminated Soils*, Essex County Correctional Facility, dated October 1999, during redevelopment of the site by the Essex County Improvement Authority in early December 1998, buried paint waste,

as well as buried crushed drums, were discovered during excavation at the Retention Pond "D" area located in the northwest corner of the site on Lot 12, along Plum Creek (PAP-00023857). In the shallowest soil sample collected in this area (1.0 feet), the following OU2 COCs were detected (PAP-00023872-78):

COC	Shallowest Sample Concentration
4,4-DDE	0.058 mg/kg
4,4-DDD	0.018 mg/kg
Aroclor 1242	6.4 mg/kg
Aroclor 1254	3.1 mg/kg
Aroclor 1260	1.2 mg/kg
Copper	811 mg/kg
Lead	810 mg/kg
Mercury	0.25 mg/kg

The maximum concentrations of PCB Aroclors and DDx were detected in a sample collected from 2.5 feet. Lead and copper were detected at maximum concentrations in a sample collected at nine feet while mercury was detected at a maximum concentration in a sample collected at 8.5 feet (PAP-00023872-78). High and low molecular weight PAHs were also detected (PAP-00023866-71). The paint-waste impacted fill on Lot 12 (approximately 1,900 cubic yards) is consistent with third-party dumping that occurred while Lot 12 was owned by the Newark Housing Authority (PAP-00026335).

In addition, according to a letter prepared by NJDEP, dated May 1, 2000, a second area of buried paint waste was identified in the southern portion of Lot 18 near Plum Creek during site redevelopment activities in 1998. Test pits were installed to determine the extent of hazardous waste in this area. It was determined that hazardous waste was present in an area approximately 100 to 120 feet long by 40 to 45 feet wide, at depths ranging from just below the surface to approximately four to five feet in depth. One soil sample was collected from a pit. The sample was analyzed for PCBs, which were detected at a concentration of 0.24 ppm (PAP-00023838). A Classification Exemption Area fact sheet produced by NJDEP also notes the presence of historic fill at the site (PAP-00445908).

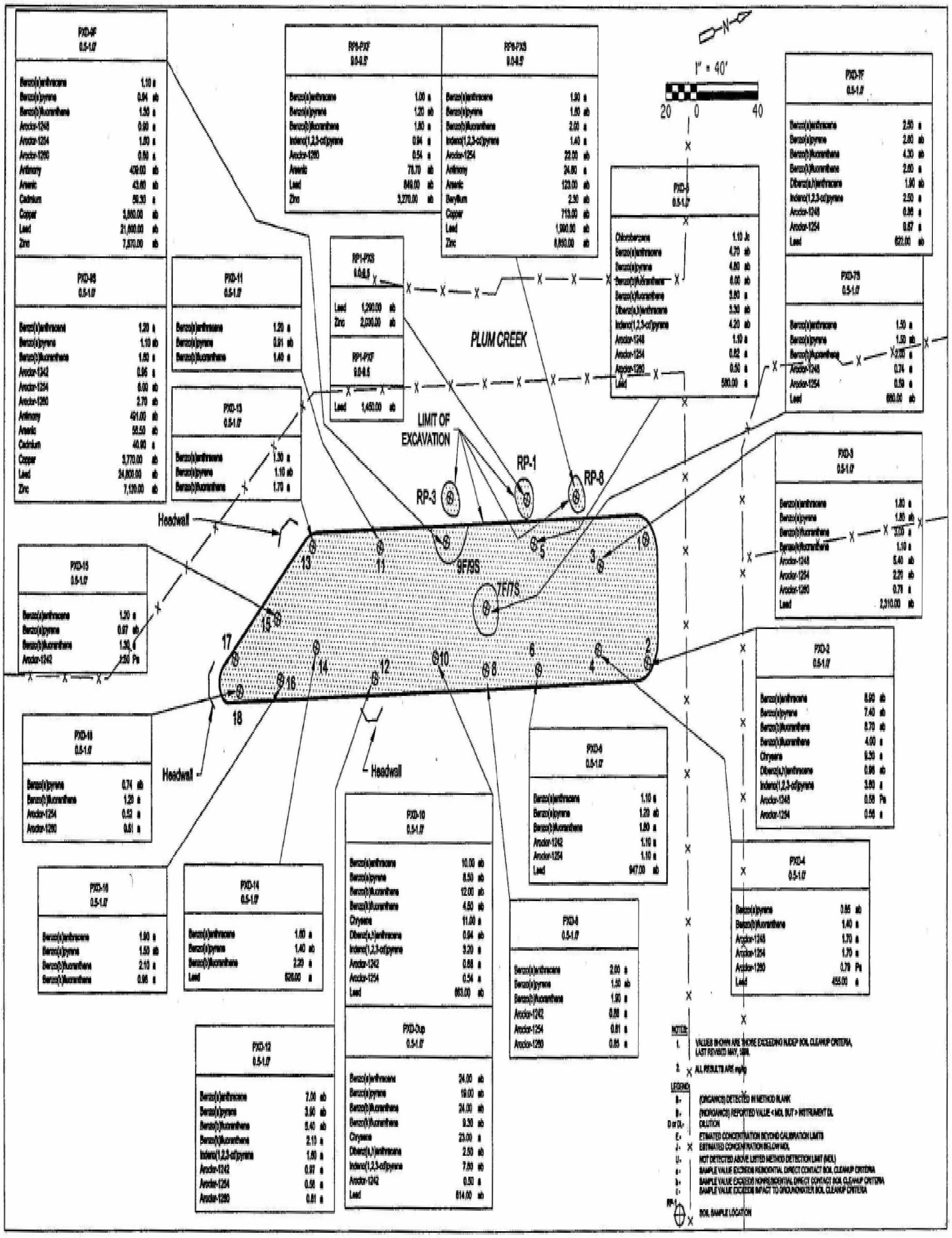
Remedial Activities

According to a *Remedial Action Report for Soils and Proposal for Institutional and Engineering Controls*, dated May 1996, soil samples were collected from numerous on-site test pits on Lot 18 in 1988 to characterize the site. PCBs were detected at a concentration of 54 ppm in a sample collected at a depth of three feet bgs. In April 1995, the soil contamination was delineated, and excavated for off-site disposal. The estimated volume of soil excavated was 117.3 cubic yards. It was reported that no post-excavation soil samples were collected, as the excavation extended vertically to the water table and horizontally to samples containing PCB concentrations below 2.0 ppm (PAP-00021424-26).

According to the *Remedial Action Report for Soils and Proposal for Institutional and Engineering Controls*, dated May 1996, of the AECs listed in the subsection above as being associated with OU2 COC contamination, excavation and off-site disposal of contaminated soil was conducted at AEC 21 (small area of stained soil beneath a pipe rack in the west-central portion of the West Farm) and 59 (decommissioned underground sump tank location in the vicinity of the East Farm truck loading area) (PAP-00021410). At AEC 21, the estimated volume of excavated soil was 6.7 cubic yards; it was reported that no post-excavation samples were collected as approved by NJDEP (PAP-00021416). The estimated volume of excavated soil and asphalt pavement at AEC 59 was 57 cubic yards; it was reported that no post-excavation samples were collected as approved by NJDEP (PAP-00021424).

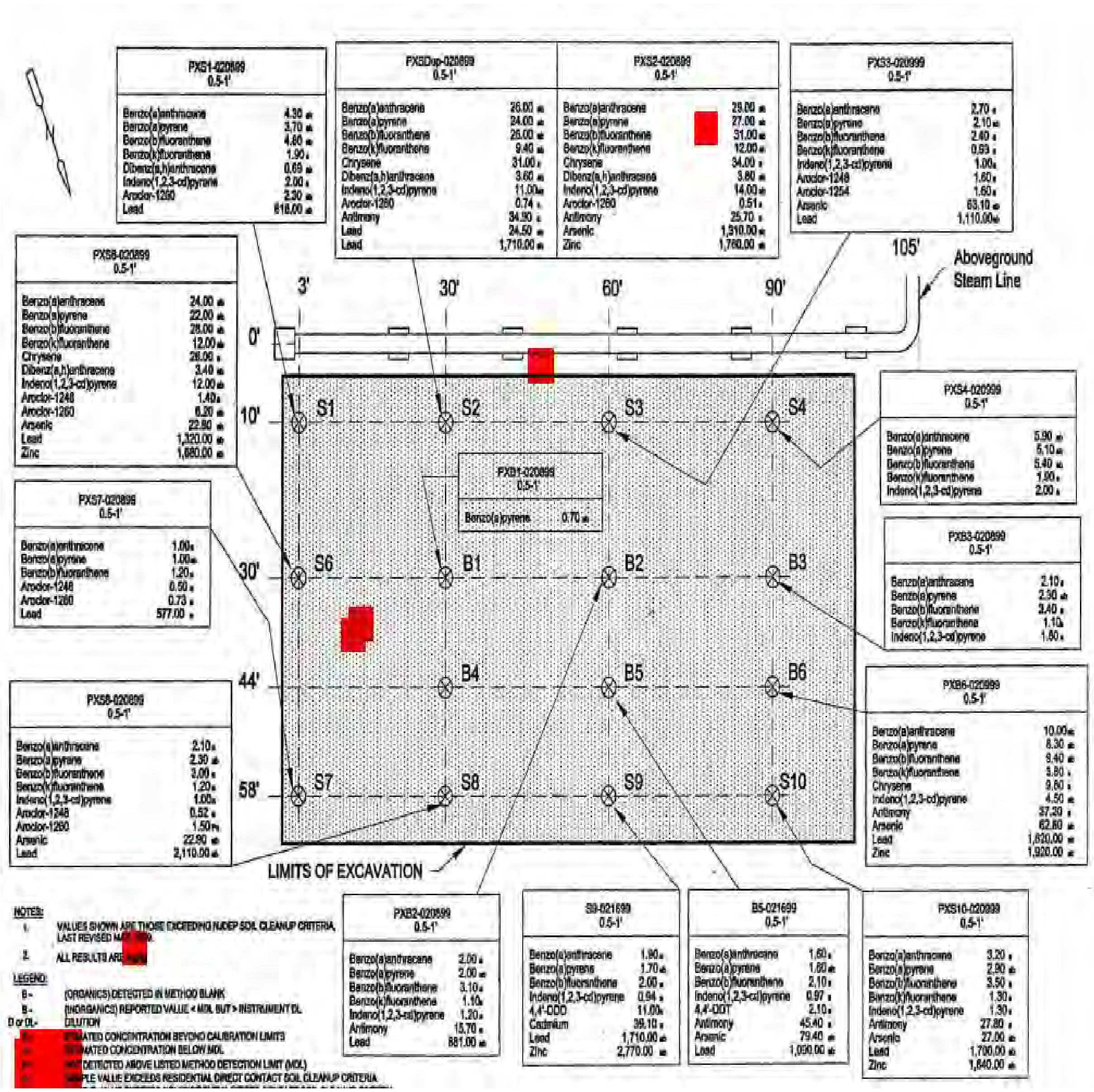
According to a *Remedial Action Report, Buried Paint Waste-Contaminated Soils*, Essex County Correctional Facility, dated October 1999, during redevelopment of the site by the Essex County Improvement Authority in early December 1998, buried paint waste, as well as buried crushed drums, were discovered during excavation at the Retention Pond "D" area located in the northwest corner of the site on Lot 12, along Plum Creek (PAP-00023857). Remediation of Pond "D," which was concluded on May 6, 1999, including excavation of the pond to a depth of at least four feet below grade. Remediation also included the removal of the buried paint waste material, stained/oily historic fill material, and the crushed drums, with remedial action confirmation by field screening, post-excavation soil sampling and laboratory analysis to document the cleanup activity (PAP-00023886).

The post-excavation data are depicted below (PAP-00023892):


1" = 40'
20 0 40
PLUM CREEK
LIMIT OF EXCAVATION
Headwall
RP-1
RP-3
RP-8
9F/9S
7F/7S
Headwall
Headwall

In addition, according to a letter prepared by NJDEP, dated May 1, 2000, a second area of buried paint waste was identified in the southern portion of Lot 18 near Plum Creek during site redevelopment activities in 1998. Test pits were installed to determine the extent of hazardous waste in this area. It was determined that hazardous waste was present in an area approximately 100 to 120 feet long by 40 to 45 feet wide, at depths ranging from just below the surface to approximately four to five feet in depth. One soil sample was collected from a pit. The sample was analyzed for PCBs, which were detected at a concentration of 0.24 ppm (PAP-00023838). Excavation of this area was conducted in February 1999 and included post-excavation soil sampling (PAP-00023879).

The post-excavation data are depicted below (PAP-00023889):



The *Remedial Action Report for Soils and Proposal for Institutional and Engineering Controls*, dated May 1996, states that between five and 14 feet of historical fill materials covered the entire site, and that the physical character, distribution and chemical composition of the fill was documented in all major reports submitted to the NJDEP (PAP-00021428). Therefore, the entire site was proposed for a Declaration of Environmental Restriction for the following OU2 COCs (PAP-00021428-29):

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(h)fluoranthene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene
- 4,4-DDD (Dichlorodiphenyldichloroethane)
- 4,4-DDT (Dichlorodiphenyltrichloroethane)
- Copper
- Lead
- PCBs

In addition, fencing was proposed for Lot 18 of the West Farm to restrict worker access to PAH contamination in detected from zero to two feet bgs (PAP-00021433-34). Review of a *Remedial Action Report, Essex County Correctional Facility*, dated March 2004, shows that the site was redeveloped into the Essex County Correction Facility, and engineering controls consisting of a site-wide cap were implemented (PAP-00025691, 93).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY

Facility Name, Address and Size: Chevron Environmental Management Company (CEMC), Getty Newark Terminal, 86 Doremus Avenue, Newark, New Jersey; 14.5 acres (PAP-00339485). The available references did not include information on the number of site employees and typical work shifts.

1. **Business Type:** The Getty Newark Terminal is a 14.5-acre petroleum storage and distribution facility (PAS-00005953). A portion of the site lies adjacent to the bank of the Passaic River (PAP-00339485).

2. **Time Period of Ownership/Operations**

   Operator: Approximately July 1951 to December 1984
   Owner: Approximately July 1951 to December 1984 (PAP-00189227)

   According to the *Remedial Investigation Report for Former Getty Newark Terminal-Area A*, prepared by Leidos and dated July 2014 (2014 RI Report), the site operational history is as follows:

   1950: The Newark Terminal was constructed in approximately 1930 and operated as a petroleum storage facility by the Atlantic Refining Company until approximately 1950. In 1951, the Terminal was acquired by the Tidewater Associated Company (Tidewater) who operated the Newark Terminal as a petroleum storage facility (PAP-00066677, PAS-00107975).

   1960: In the 1960s Tidewater merged with Getty Oil Company and the facility was later operated by a Getty Oil Company subsidiary (known as Getty Refining and Marketing, Inc.) (PAP-00066677, PAS-00091764).

   1984: Getty Refining and Marketing, Inc. had its name changed to Texaco Refining and Marketing Inc. following Texaco Inc.'s acquisition of Getty Oil Company in 1984. In December 1984, title and interest in the property was transferred to Power Test Realty Company Limited Partnership, affiliated with Getty Properties Corporation and Getty Realty Corporation (PAP-00066677).

   1989: In 1989, Texaco Inc. undertook a restructuring which included the creation of a new Texaco Refining and Marketing Inc. (new TRMI) and the transfer of the then-operating refining and marketing assets from the old TRMI to the new TRMI. Old TRMI continued to be responsible for certain legacy issues. Its name was changed to TRMI Holdings Inc., which was later reorganized as TRMI-H, LLC (PAP-00066677).

   2001: In October 2001, Chevron and Texaco, Inc. merged (PAP-00066677).

   2011: From 1985 to 2011, Getty Terminals leased and operated a bulk fuel terminal at the site until entering bankruptcy in 2011 (PAP-00066678).

3. Operational History/COC Use and Presence at the Facility

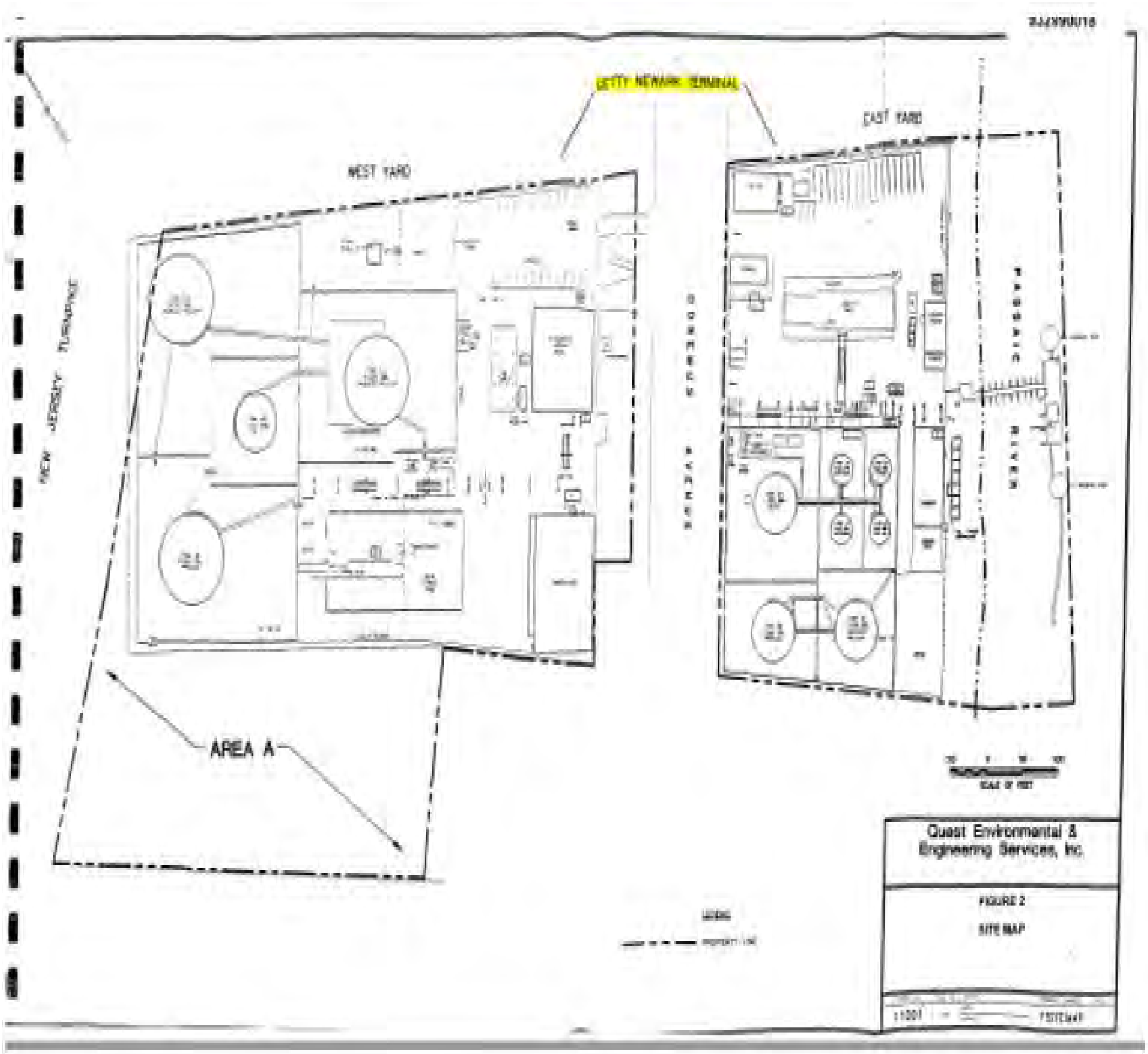
The Getty Newark Terminal is a 14.5-acre petroleum storage facility located at 86 Doremus Avenue in Newark, Essex County, New Jersey (PAP-00339485). The property is bisected by Doremus Avenue with the portion located east of Doremus Avenue referred to as the "East Yard" and the portion west of Doremus Avenue referred to as the "West Yard." The site also includes "Area A," consisting of 2.5 undeveloped acres located south of the West Yard. Based on review of historic documentation and review of historic aerial photo documentation from April 1947, April 1959, January 1963, March 1969, May 1970, April 1973, and April 1978, it was determined that Area A was never used for petroleum or other operations and fill material has historically been placed across the property (PAP-00189228).

Petroleum products were received at the terminal via pipeline and stored in 11 above ground storage tanks (ASTs). Occasionally, products were received from barges at a loading dock on the Passaic River and piped into aboveground storage tanks (ASTs) (PAP-00066940).

11 ASTs Contents		
Material	**Quantity**	**Location**
Diesel Fuel	15,600 barrel (bbl)	Tanks 1, 3, and 4
No. 2 Fuel Oil	42,000 bbl	Tanks 5 and 8
Kerosene	5,200 bbl	Tank 2
Gasoline	204,000 bbl	Tanks 6, 7, 9, 10, and 11

(PAP-00066936)

The terminal also utilized approximately eight underground storage tanks (USTs) in association with the bulk fuel terminal operations (PAP-00066943). Petroleum products were dispensed into tanker trucks for delivery off-site via a loading rack located in the East Yard (PAP-00066940, PAP-00067198).



(PAS-00107775)

4. Identified COCs

- PCBs (detected)
- PAHs (stored and released)
- Copper (detected)
- Lead (stored and released)

According to a *Remedial Action Assessment Report for Getty Newark Terminal* prepared by Quest Environmental & Engineering, dated May 12, 1998, ten areas of concern (AOCs) were identified which required additional remedial investigation or remedial action. One of the ten AOCs was groundwater contamination, and the primary contaminants of concern for groundwater are not relevant to the current allocation (PAS-00107625).
The remaining AOCs were:

East Yard

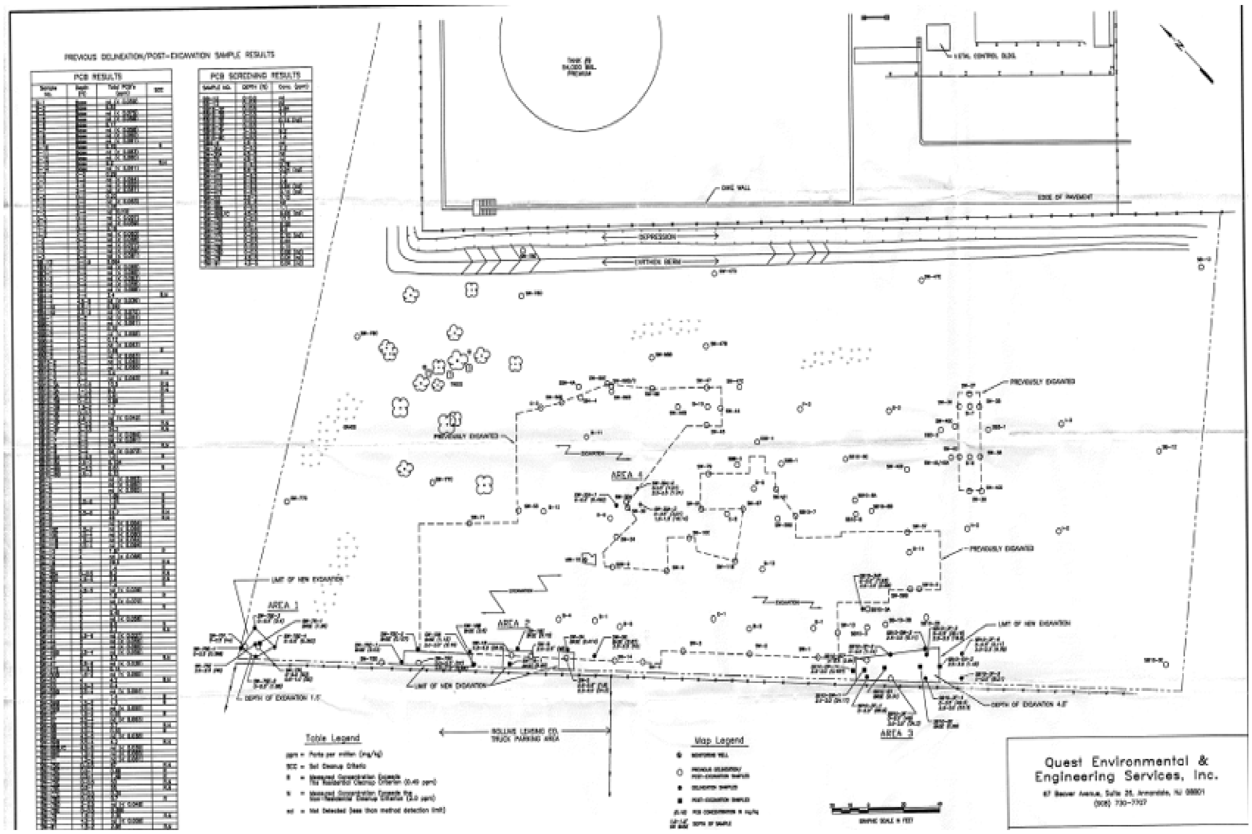
- Loading Rack Area
- Removed 1,000 Gallon No. 2 Fuel Oil Underground Storage Tank (UST)
- Pump and Bleeder Valves Area
- Fuel Additive Tank Pump
- Vapor Recovery Unit

West Yard

- Removed 550 Gallon Waste Oil UST
- 10,000 Gallon Aboveground Diesel Tank
- Area A
- Free Product Layer in Monitoring Well MW-18 (PAS-00107625).

PCBs

PCBs were first detected in Area A (adjacent to the West Yard) during excavation of soils in 1990. Soils were initially excavated from Area A to remediate concentrations of Total Petroleum Hydrocarbons and Lead. Waste classification sampling of the excavated soil revealed the presence of PCBs. Subsequent investigation of PCBs in remaining soil showed PCB concentrations exceeding the Nonresidential Soil Cleanup Criterion (SCC) of 2 mg/kg in areas within the central portion and along the southern perimeter of Area A (PAP-00066763). The highest concentrations were detected along the southwestern property boundary and in off-site sampling locations (PAP-00066682). Highest concentrations, ranging from 10 mg/kg to 67 mg/kg (Area 2; SW-75C at 0-0.5 ft) were detected along the southern perimeter. Historic aerial photographs revealed that Area A has undergone filling activities, which are the likely source of PCBs. Aerial photographs and the extent of PCB concentrations were previously presented in a report entitled Soil Sampling Results in Area A and East Yard Paved Area, Getty Petroleum Corp. Terminal, Newark City, Essex County, September 11, 1995, prepared by Quest Environmental, Inc. (PAP-00066682). In a letter dated December 6, 1996, New Jersey Department of Environmental Protection (NJDEP) accepted the evidence of historic fill and stated that no further action was required with regard to off-site sampling (PAP-00066682).



(PAP-00066777)

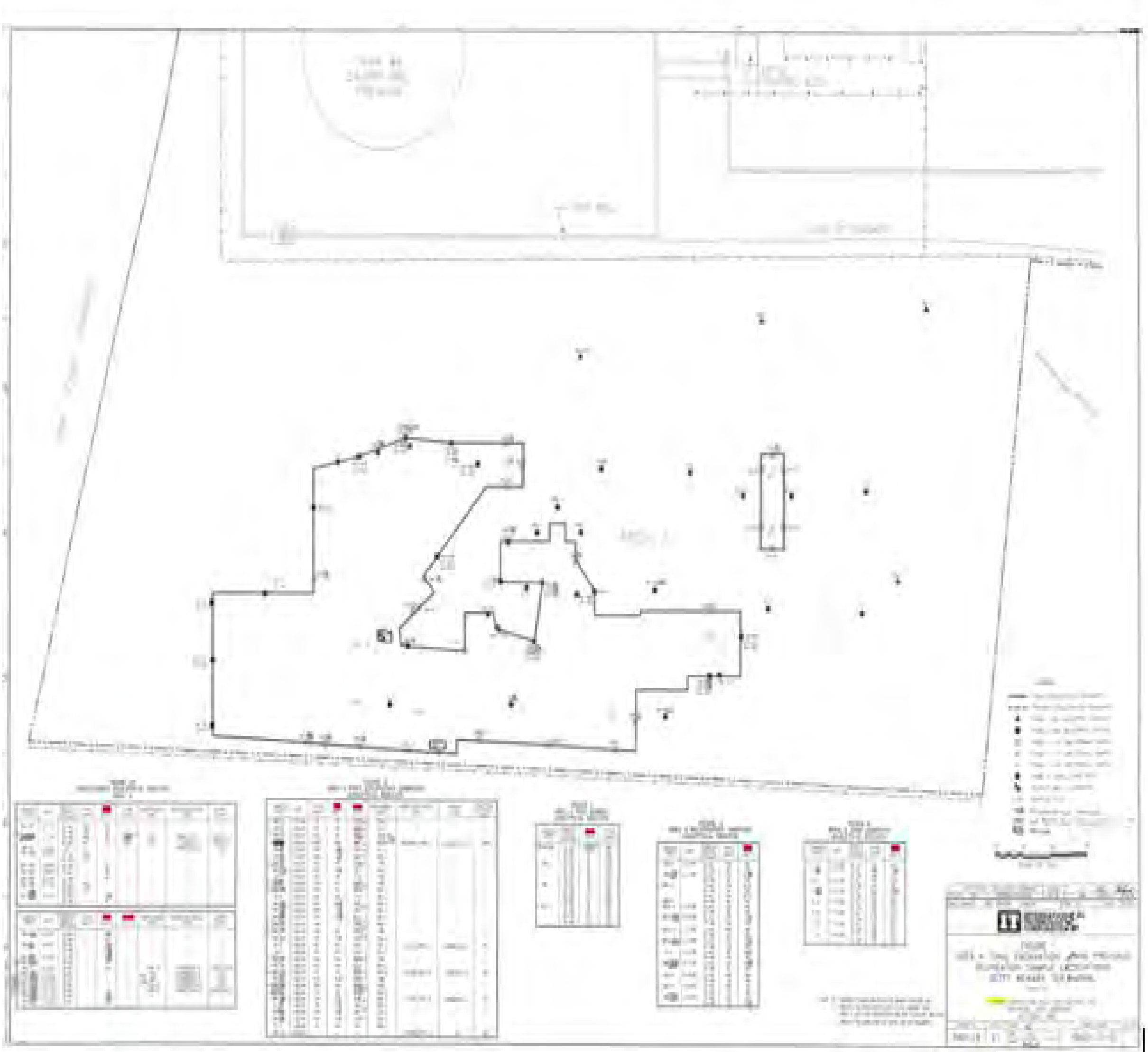
Quest collected soil samples to delineate four areas containing elevated PCB concentrations. Based on the delineation sample results, hot-spot areas of PCB concentrations exceeding 20 mg/kg were targeted for removal. The 20 mg/kg level was selected because it would ensure removal of PCB concentrations exceeding the Impact to Groundwater SCC of 50 mg/kg and would target removal of PCB concentrations greater than 10 times (one order of magnitude) the Non-Residential SCC of 2 mg/kg (PAP-00066682). Post-excavation soil sampling results show total PCBs ranging from 0.09 mg/kg in Area 3 (SB10-B1) at the base of the excavation to a maximum concentration of 24.17 mg/kg in Area 3 (SB10-SW-1) at a depth of 2.5-3.0 feet bgs (PAP-00066765-76).

According to the 2014 RI Report, horizontal delineation of PCBs in Area A is complete to the property boundary, and PCBs were vertically delineated in 2004, to a depth of 11.5 feet bgs in soil samples collected within the center of Area A from native soil underlying the fill (PAP-00066686-7). PCB-impacted soils remain on-site at concentrations ranging from 0.064 mg/kg to 10.5 mg/kg detected in SB10-3A. PCB concentrations decrease with increasing depth in the fill and are either not detected or detected below the Residential Direct Contact Soil Remediation Standards (RDCSRS) in samples collected in native soil beneath the fill (PAP-00066698).

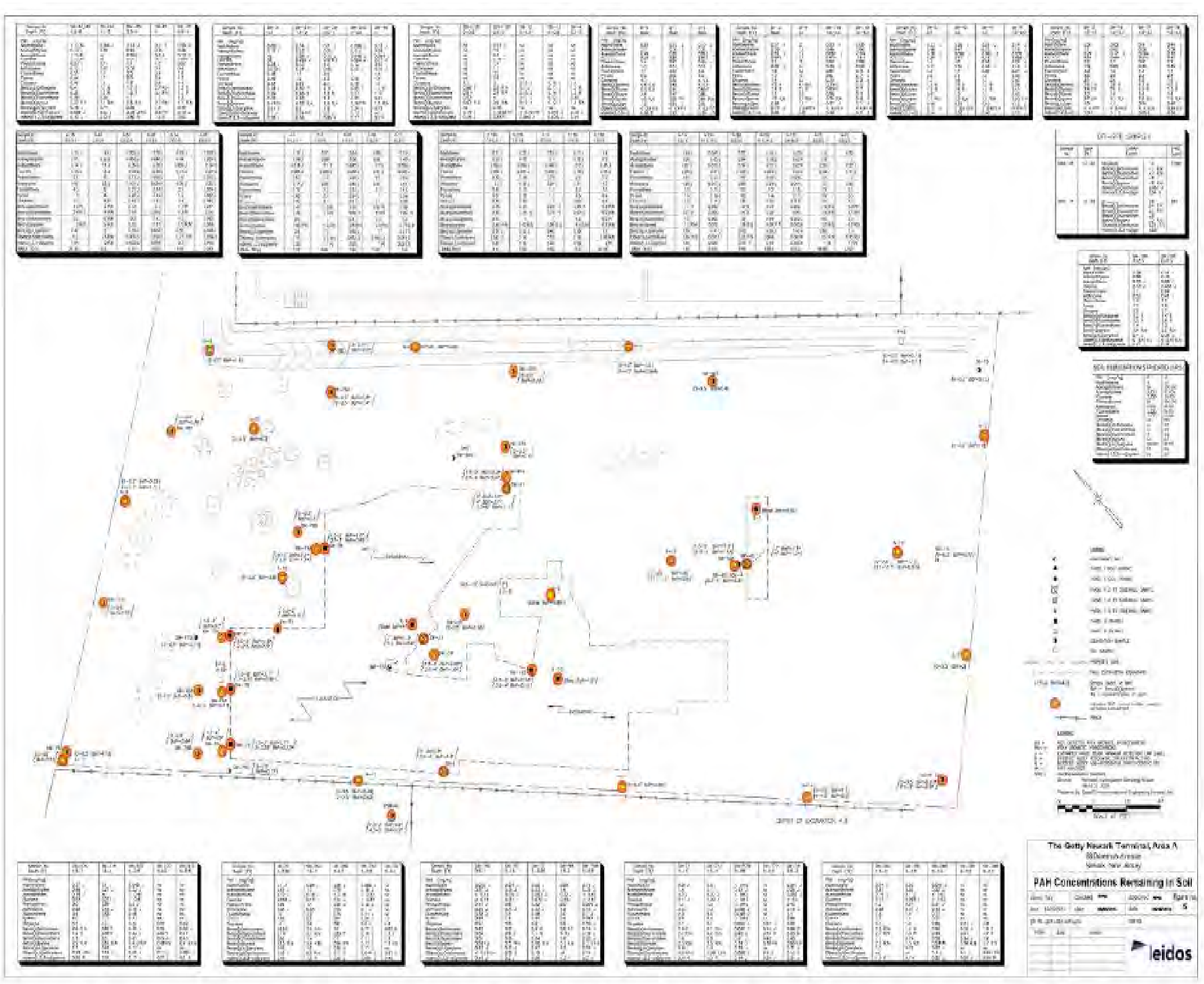
PAHs

Remedial investigations conducted between 1990 and 1995 showed soils with polycyclic aromatic hydrocarbons (PAHs) were detected at the Loading Rack Area (East Yard) (PAS-00107628). In addition, benzo(a)pyrene was also detected above cleanup criteria in one sample in the Tank Basin Area located in the East and West Yard. Several PAHs were detected in the Loading Rack Area and Area A located adjacent to the West Yard (PAS-00005099).

No PAHs were identified in soils during the 1990-1995 remedial investigation at the 1,000 Gallon No. 2 Fuel Oil UST, Pump and Bleeder Valves Area, Fuel Additive Tank Pump, and Vapor Recovery Unit (PAS-00107650-70). In addition, no PAHs were identified in the removed 550 Gallon Waste Oil UST, 10,000 Gallon Diesel Fuel AST, and Free Product Layer in Monitoring Well MW-18 (PAS-00107672, 78, 97).



(PAS-00005116)



(PAP-00066708)

According to the 2014 RI Report, horizontal delineation of PAHs in Area A is complete to the property boundary. PAH concentrations remaining on-site include the following (PAP-00066698, 716-723):

PAH Concentration Remaining in Area A (mg/kg)			
Constituent	**Sample Date**	**Min Concentrations**	**Max Concentrations**
Benzo(a)pyrene	2/24/04	0.11 (A-3B)	19 (A-2A)
Benzo(a)anthracene	2/24/04	0.047 (A-5B)	12 (A-2A)
Benzo(b)fluoranthene	2/24/04	0.13J (A-17B)	23 (A-2A)
Benzo(k)fluoranthene	2/24/04	0.042J (A-17B)	26 (A-2A)
Dibenz(a,h)anthracene	2/24/04	0.042J (A-17B)	2.8 (A-2A)
Indeno (1,2,3-cd)pyrene	2/24/04	0.043U (A-17B)	10 (A-2A)

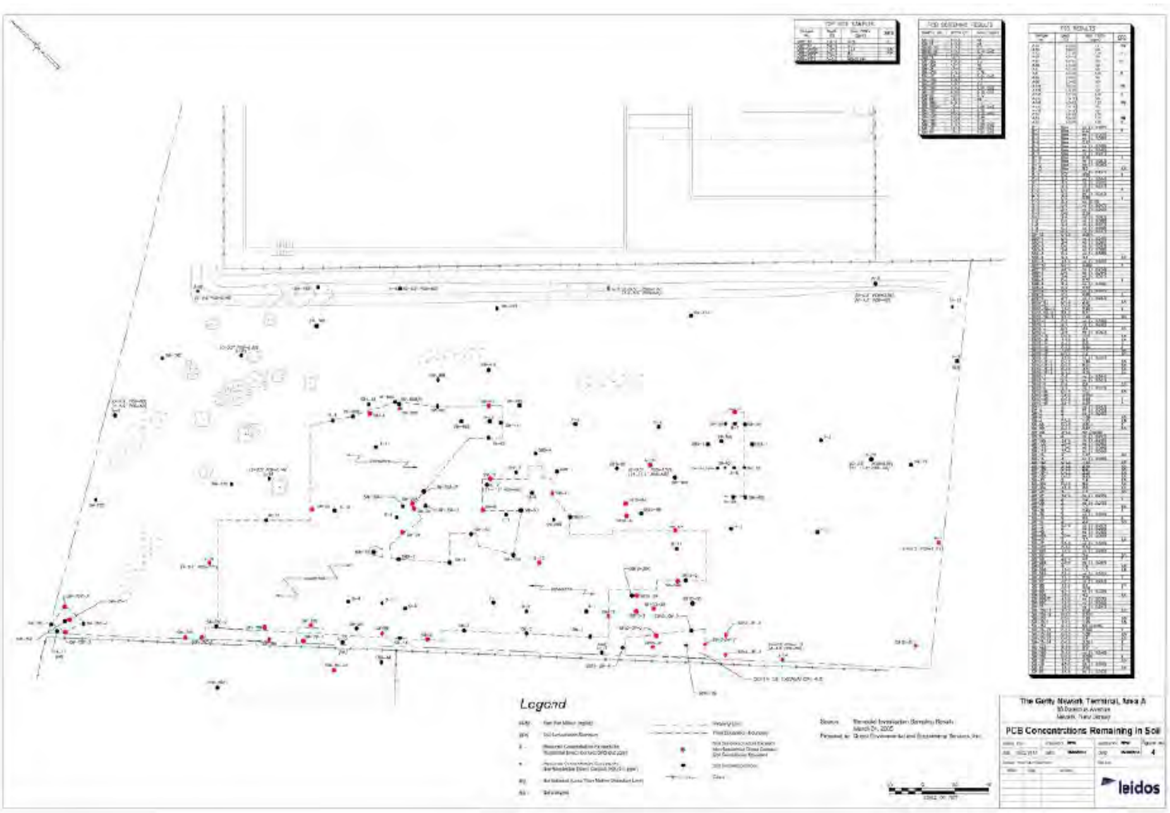
The vertical distribution of PAHs at the site did not show a consistent decreasing gradient from the surface; however, historic fill placement or atmospheric deposition of diffuse anthropogenic pollution prior to fill could be the source for some of the PAHs detected at the site (PAP-00066690, 98).

Metals- Copper and Lead

A letter dated October 30, 1993, from the new TRMI terminal superintendent to the Getty Terminals Corp. terminal manager stated that soils in the tank basin areas were previously remediated to the cleanup levels established in 1990; however, due to NJDEP's May 1993 revisions of cleanup criteria, some concentrations of lead exceeded the new criteria. Lead was detected at concentrations between 100 and 1,000 mg/kg (PAS-00005097-98).

Lead also exceeded the cleanup levels in the Loading Rack Area (East Yard) at concentrations between 100 to 6,430 mg/kg and in Area A at concentrations between 100 and 996 mg/kg (PAS-00005099).

According to the 2014 RI Report for Area A,. samples A-1A and A-2A, each taken at 0-0.5 feet bgs, were reported at 473 and 704 mg/kg, respectively, were below the Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) of 45,000 mg/kg (PAP-00066720).



(PAP-00066707)

According to the 2014 RI Report, the source of lead and other priority pollutant metals is historic fill and delineation of historic fill is complete to the property boundary. As shown on the figure below, lead concentrations remaining in soil are less than the NRDCSRS of 800 mg/kg, with the exception of lead detected in sample (SW-6) at a concentration of 996 mg/kg and in sample SB4-4 at a concentration of 980 mg/kg. Vertical delineation of lead to the Residential Direct Contact Soil Remediation Standards (RDCSRS) in Area A is complete based on the concentrations detected in deep samples (A-15C, A-16C, A-17B) which were collected from 9-11.5 feet below ground surface (bgs) (PAP-00066692).

Historical Fill

The Allocation Team has determined that the facility site is located on regional Historic Fill as designated by the NJDEP.[1]

The New Jersey Department of Environmental Protection (NJDEP) has established that Historic Fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the United States Environmental Protection Agency (EPA) Target Compound List (TCL) for PAHs and Target Analyte List (TAL) for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

The PCBs, PAHs, copper, lead and mercury detected at the site in soils are presented in the table below.

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	84,200 mg/kg
Copper	456 mg/kg
Mercury	5.3 mg/kg
Benzo(a)anthracene	3.5 mg/kg
Benzo(a)pyrene	3.7 mg/kg
Benzo(b)fluoranthene	2.3 mg/kg
Benzo(k)fluoranthene	4.4 mg/kg
Dibenzo(a,h)anthracene	0.66 mg/kg
Indeno(1,2,3-cd)pyrene	6.0 mg/kg

(PAP-00339532, PAP-00066698, PAP-00066720-21)

5. COC Pathways

Sanitary Sewer

There is no information regarding sanitary sewers in the available file material.

Storm Sewer

According to a letter dated June 4, 2004, regarding a Supplemental Request for Information from Chevron to EPA, to the best of Texaco's knowledge, surface runoff from the West Yard was collected by catch basins that were connected to the municipal wastewater collection system. Area A is a two to two-and-a-half-acre undeveloped portion of the Getty Newark Terminal (PAS-00107511, PAP-0006695). A topographically low area exists at the westernmost portion of Area A, which is adjacent to the New Jersey Turnpike. This low area may receive surface runoff from other portions of Area A and the New Jersey Turnpike property (PAS-00107511).

According to the information presented in the *Cleanup Plan for Newark Terminal*, prepared by IT Corporation and dated October 1989, the East Yard surface runoff was channeled to an oil/water separator located adjacent to the east side of the garage. Surface water drainage from the East Yard is directed to the separator where sediment and oil are removed by gravity from stormwater prior to being discharged to the Passaic River (PAP-00339501).

6. Regulatory History/Enforcement Actions

Inspections and Violations

To the best of CEMC's knowledge there were two minor releases of petroleum product directly to the Passaic River during CEMC's affiliates ownership/operation of the terminal occurring in 1982 and 1984. Both releases involved equipment malfunctions during product delivery at the receiving dock. Minor amounts (less than 4 gallons) of diesel and

gasoline respectively and de minimis amount of COCs, if any, contained therein reached the River (PAP-00067539-56; PAP-00066946-67).

According to a Preliminary Assessment / Site Investigation Report prepared by JM Sorge, Inc. dated March 2014, an oil/water separator was located on the East Yard adjacent to the Passaic River and discharged to the river under NJPDES Permit No. NJ0026034 (PAP-00084091). According to a September 8, 1980 Authorization to Discharge under National Pollutant Discharge Elimination System, NPDES Permit No. NJ0026034 took effect on October 31, 1980 (PAP-00066509).

Permits

According to a Preliminary Assessment / Site Investigation Report prepared by JM Sorge, Inc. dated March 2014, New Jersey Pollutant Discharge Elimination System (NJPDES) Permit NJ0026034 and was initially permitted in November 1985. This permit expired on January 31, 2014 (PAP-00084091).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- Cleanup Plan, Newark Terminal, October 1989 (PAP-00339476)
- Tank Basin Remediation Report, Newark Terminal, January 1991 (PAS-00107561)
- Area A Closure Report, Newark Terminal, November 1991 (PAP-00066737)
- Area A Phase IV Soil Sampling Results, October, 1993 (PAS-00005100)
- Results Summary of Additional Phase V Soil Sampling, January 1994 (PAS-00005037)
- Remedial Action Workplan Addendum, October 12, 1994 (PAP-00339726)
- Soil Sampling Results, Area A and East Yard Paved Area, September 11, 1995 (PAP-00339794)
- Remedial Action Report for PCB Soils in Area A, Volume 1 Report, July 25, 1997 (PAP-00066760)
- Remedial Action Assessment Report, Getty Newark Terminal, May 12, 1998 (PAS-00107619)
- Remedial Investigation Work Plan for Area A, October 7, 2003 (PAP-00340057)
- Remedial Investigation Sampling Results for Area A, March 31, 2005 (PAP-00340011)
- Baseline Ecological Evaluation Report, February 23, 2006 (PAP-00066799)
- Addendum to the “Baseline Ecological Evaluation (BEE) Report, Feburary 2006”, March 12, 2006 (PAP-00066848)
- Remedial Action Work Plan Addendum, Getty Newark Terminal – Area A, August 21, 2013 (PAP-00189223)
- Preliminary Assessment/Site Investigation Report, March 2014 (PAP-00084072)
- Remedial Investigation Report, Former Getty Newark Terminal – Area A, July 2014 (PAP-00066671)

Sewer

There is no information regarding sewer sampling data in the available file material.

Soil

Three investigations (Phases I-III) were conducted at the site in the 1980s to screen for TPHC and lead, and the 1989 Cleanup Plan was the result (PAP-00339485).

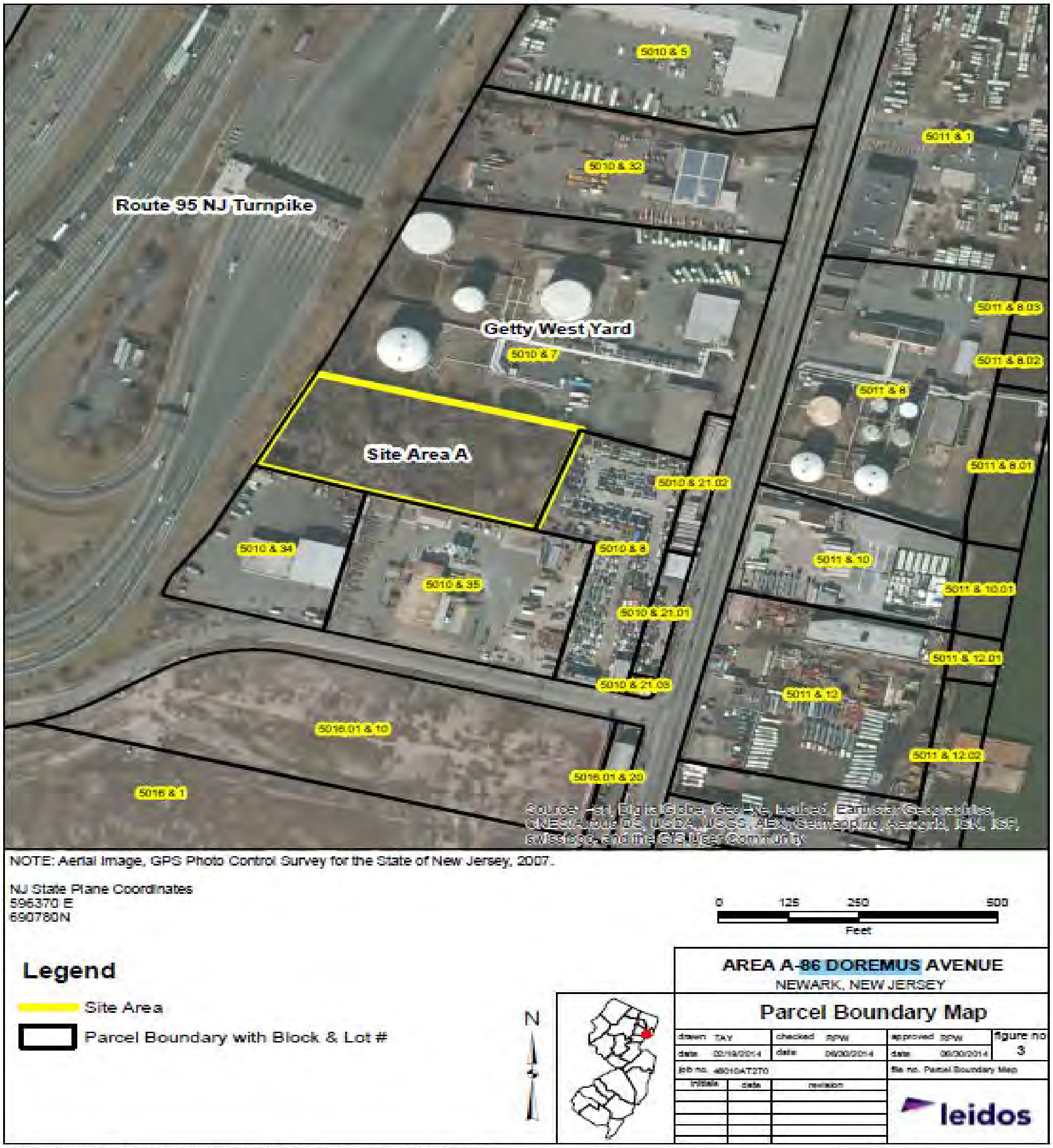
Results from Phase I sampling (terminal-wide and Area A) showed that levels of lead for samples inside the dikes of the tank basins ranged from 36 mg/kg to 1,000 mg/kg. Soil samples from the stormwater discharge area contained lead levels ranged from 71 mg/kg to 2,700 mg/kg. Soil samples from the four soil borings contained lead levels ranging from 6.2 mg/kg to 320 mg/kg (PAP-00339506).

Phase III (terminal-wide and Area A) results for lead concentrations in the West Yard tank basins ranged from 3.5 mg/kg to 1,400 mg/kg (PAP-00339529). Concentrations in the East Yard tank basins ranged from 5.6 mg/kg to 2,000 mg/kg (PAP-00339530-31). Area A concentrations ranged from 1.3 mg/kg to 8,200 mg/kg (PAP-00339532).

The Phase IV investigation activities (Area A) were performed to further delineate the COCs identified from the results of the Phase II and Phase III investigations to revised cleanup criteria adopted by NJDEP in March 1993 and focused on PAHs and PCBs. Phase IV delineation soil samples showed that PCBs were detected at various locations within Area A. The presence of PCBs extended to the property boundaries, and the concentrations of PCBs in soil samples showed decreasing concentrations with depth. Additionally, PAHs were identified at various locations to a depth of four feet within the fill material at Area A (PAP-00066681, PAS-00005103).

The Phase IV soil investigation activities were summarized in a report prepared by IT, entitled: "Area A Phase IV Soil Sampling Analytical Results, Getty Newark Terminal, ISRA Case No. #84455" dated October 1993. Comments on this report were received from the NJDEP in a letter dated August 29, 1994. The NJDEP requested additional investigations in the areas where PCB levels exceeded the NJDEP residential soil cleanup criteria and the delineation of post-excavation samples which did not meet the revised February 1994 Residential Direct Contact Soil Cleanup Criteria (RDCSCC). Additionally, the NJDEP requested that viable evidence that the contaminated soil present in Area A is the result of past filling operations be submitted (PAP-00066681).

In October 1994, investigation activities included the collection of soil samples to delineate impacts within and outside the limits of Area A. A total of 36 samples were collected for horizontal and vertical delineation of PCBs in Area A and 25 samples for the horizontal and vertical delineation of PAHs. Additionally, six soil samples were collected from the property southwest of Area A (Block 5010, Lot 34) (PAP-00066681-82).



(PAP-00066706)

Soil sampling results showed that the most elevated PCB concentrations existed in soil along the southwestern property boundary and in off-site sampling locations. PCB concentrations within Area A generally decreased from south to north. Concentrations within the interior were generally less than 2 ppm. PAHs were detected throughout Area A soils; however, higher PAH concentrations were detected within the southern portion of Area A and along the southern property boundary (PAP-00066682).

Elevated PAH concentrations were also detected in off-site soil samples, suggesting a possible historic fill-based off-site source. Investigative activities also included review of aerial photographs from the 1947, 1959, 1963, 1969, 1973, and 1982 which provided evidence of historic fill placement. In a letter dated December 1996, NJDEP accepted the evidence of historic fill and stated that no further action was required in regards to off-site sampling (PAP-00066682).

Remedial Activities

Remedial Activities completed in Area A include soil excavations completed in four phases. Phase I was conducted in 1988, Phase II and III were conducted in 1990-1991, and Phase IV in 1993 (PAP-00066679-81).

In May 1990, soil containing lead were delineated and excavated to site specific cleanup criteria. Reportedly, a waste characterization sample collected for disposal showed the presence of PCBs in soil. Subsequently, NJDEP requested additional investigation to evaluate the potential presence of historic fill in Area A and additional soil sampling to delineate PCB soil impacts (PAP-00066680).

Between November 1990 through January 1991 and May 1991 through September 1991, approximately 4,000 tons of lead and PCB impacted soil were excavated from Area A and disposed of off-site. Post excavation samples were collected as directed by NJDEP (PAP-00066680-81). Further removal of PCBs was performed in 1996 and 229 tons of soil was excavated and disposed of offsite (PAP-0006682). In a letter dated June 12, 1992 NJDEP declined the request for a No Further Action determination because post excavation sampling was not deemed sufficient to demonstrate cleanup to approved levels, and contamination levels along the southern property line were not considered to be fully delineated (PAP-00066681).

8. Summary of Asserted Defenses

Chevron asserts that

- "The petroleum exclusion exempts all releases of petroleum product at the site from CERCLA liability and would cover direct and indirect releases (stormwater and groundwater) to the River.

- CEMC's affiliates are not current owners of the site and, as such, under CERCLA, would not be liable for releases/disposal occurring at the site prior to or after their ownership/operation.

Diamond Alkali OU2 Allocation

ADR Confidential

Facility Data Report

COATS & CLARK INC.

Facility Name, Address and Size: Clark Thread Company (Clark), 735 Broad Street, Bloomfield New Jersey. Clark owned 40-acres (PAP-00075263) located along the Third River on Broad Street.

1. **Business Type:** Clark treated cotton thread by bleaching and mercerizing processes (PAP-00075777).

2. **Time Period of Ownership/Operations**

   Operator: ~1922-Late 1940's (PAP-00075222)
   Owner: 08/10/1921 – 09/17/1947 (PAP-00075777, PAP-00075222; PAP-00079489; PAP-00080155)

   Clark owned the property while it operated the facility (PAP-00075222). According to an undated article in the Real Estate section of the Newark Evening News, Clark sold the 40-acre tract and buildings to Scientific Glass Apparatus Company, Inc. (SGA) and both companies operated in the building for a period of time. Clark was in the process of moving the Bloomfield operations south to Georgia to join its main facilities (PAP-00075263). A letter dated June 25, 1946, discussed moving package bleaching machinery to the Toccoa (Georgia) mill (PAP-00725690), while a letter dated December 23, 1946, discussed moving the nylon dyeing operations to the Pawtucket mill due to the impending closure of the Bloomfield mill (PAP-00726428). A May 2006 article in The New Town Crier, the Official Newsletter of the Historical Society of Bloomfield, stated that the Clark Bloomfield plant closed in 1949 and moved to Amstell, Georgia (PAS-00027121).

   Coats & Clark Inc. was identified as the successor to Clark Thread Company in a June 21, 2017 letter to the Environmental Protection Agency (PAP-00080438). An online article from the Coats website stated J. P. Coats and the Clark Thread Co. merged to become Coats & Clark Inc. in 1952 (PAS-00027111).

   According to a *Supplemental Remedial Investigation Report*, dated May 2014 (2014 Supplemental RIR), AFC Realty razed the buildings at the site in 1989. It is unclear if this company was related to Leo Realty, the owner of the site at that time. In addition, the 2014 Supplemental RIR stated Somerset Development LLC purchased the site in 2011 with plans for redevelopment (PAP-00079489). The Model Deed Notice included as Appendix 4 to the 2014 Supplemental RIR identified Somerset Development LLC as the owners of the property at that time (PAP-00080106). According to the March 2017 Remedial Action Report, construction of townhouses was initiated in 2012, but was stopped when the Township took ownership of the site (PAP-00080185).

   A Deed Notice for the property was filed February 2, 2017 and identified the Township of Bloomfield as the owner. The Deed Notice restricts the land use for certain areas of the property because historic fill (including exceedances of PAHs and lead) and historically-applied pesticide (chlordane) remains at the site (PAP-00080172-3). The site cannot be used for single family residences, childcare facilities, or schools (PAP-00080155-6).

The owner of the site was identified as Bloomfield Township on an application for Remedial Action Permit Application – Soil, dated March 30, 2017 (PAP-00080222).

3. Operational History/COC Use and Presence at the Facility

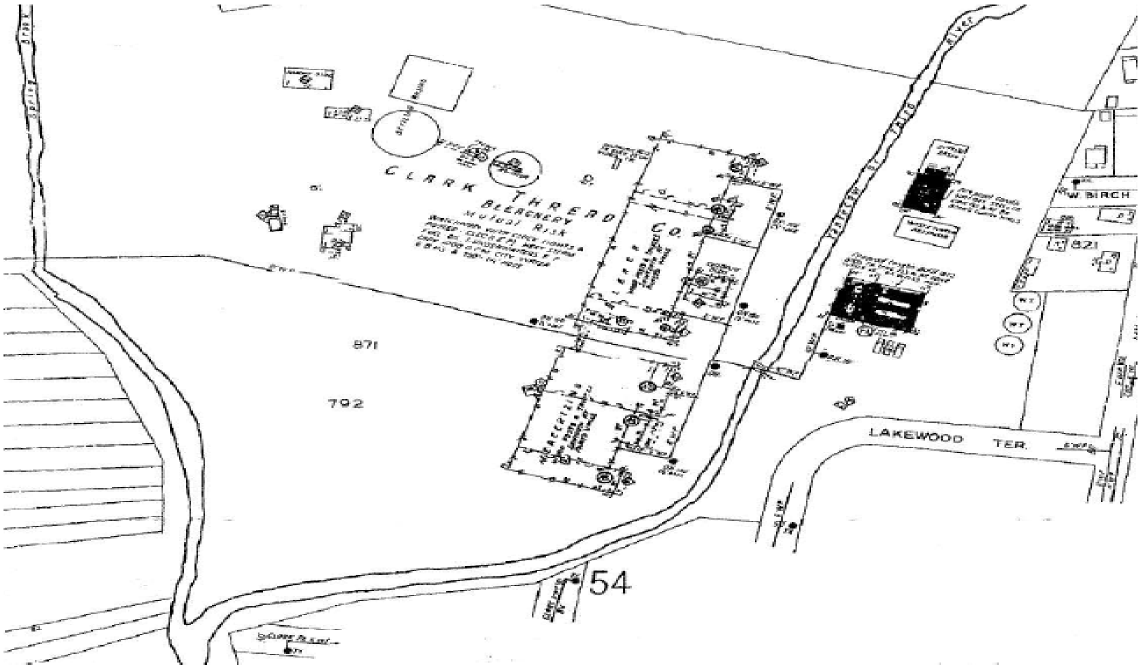
Clark operated a mill to process cotton threads by bleaching and mercerizing processes. During mercerizing, the cotton threads were treated with caustic soda (sodium hydroxide) to shrink the fibers and increase their absorbance of dye colors and luster (PAP-00075777, PAP-00080514). In addition, according to the *Preliminary Assessment Report*, dated August 17, 2000 (2000 PAR), Clark operated a small laboratory to conduct dye-fast testing, which would have used small amounts of dye (PAP-00080514). In addition, an article in The New Town Crier, the Official Newsletter of the Historical Society of Bloomfield, stated that boilfast dyes were developed and produced at the Bloomfield site (PAS-00027121).

The 2000 PAR stated that cotton threads were sent off-site for dye-house operations (PAP-00075223). However, a letter dated September 22, 1922 discussed a new dyehouse to be installed in Bloomfield, and stated that machinery and handboxes in use at the Newark and East Newark dyehouses could be transferred to Bloomfield (PAP-00725940-41). In addition, documentation from the Passaic Valley Sewerage Commissioners (PVSC), dated August 20, 1925, and a PVSC *Report on the Status of Pollutions from Industrial Establishments*, dated November 28, 1926, notted that the pollution from the Newark and East Newark mills was abated when Clark moved the dyeing and mercerizing operations to the Bloomfield plant (PAP-00128118; PAP-00129824). Further, an article written by Mr. Walter E. Hadley about Clark Thread Co. in February 1927 stated that the dyehouse, mercerizing, and bleaching departments were moved outside of Newark (PAP-00726263).

According to the *Phase II Environmental Site Assessment (ESA)*, prepared by EcolSciences, Inc. dated November 9, 1993 (1993 Phase II EA), the Sanborn map from 1938 (see figure below) showed Clark operated two separate mill buildings, with the southernmost used for the cotton mercerizing operations and building to the north used for thread bleaching operations. Other buildings on-site included a chlorine building to the east and a storage garage north of the main buildings. On the west side of the property, there was a wastewater treatment plant including a wastewater agitator tank and settling basins. Clark also owned property on the east side of Third River, which included a power plant for the mill and some of the thread processing operations. The 1950 Sanborn map showed that the two main mill buildings were connected at some point between 1938 and 1950 (PAP-00075778).

A cost estimate submitted to the Manufacturing Committee New York and dated July 31, 1939 identified a break in the sewer west of the Dye House that needed to be repaired. Waste from the Dye House was stated to be discharging into a brook (PAP-00725693). Although the brook is not identified in the cost estimate, two bodies of running water were located at the site. Based on the Sanborn map from 1938 (see figure below), the Third River ran through the site along the mill buildings. Spring Brook was also located at the western edge of the site and met with the Third River directly downstream of the site (PAP-00075242). According to the June 11, 2003, Remedial Investigation

Workplan, the Third River flows southerly past the site toward the confluence of the Third River and the Passaic River (PAP-00077783-84).



(Sanborn map from 1938; PAP-00075242)

According to a June 2004 Technical Review Panel (TRP) Decision Document, the chemicals believed to be used by Clark were sodium hydroxide, wetting agents, sulfuric acid, sodium hypochlorite and dyes. The sulfuric acid and sodium hydroxide were stored in exterior above ground storage tanks, while the rest of the chemicals were stored inside the plant. The sodium hypochlorite was stored in the chlorine building, located off the east side of the bleaching building. The exact storage location of the other chemicals was not known (PAP-00078074).

According to the article by Mr. Walter E. Hadley about Clark Thread Co. from February 1927, the wastewater treatment plant was to be installed due to the lack of a sewer system in Bloomfield. The treatment system consisted of a 55-foot wide and 7 to 10-foot deep circular settling tank. Lime and alum were added to produce a sludge that was pumped out onto a large area of land and allowed to dry. The liquid was discharged to a brook (PAP-00726263).

As reported by the 2000 PAR, water from an off-site pond was used to wash the treated and untreated thread. The used water was discharged via underground piping to a wastewater agitator tank and then pumped to settling basins located west of the building. The local Municipal Utilities Authority (MUA) handled sanitary waste (PAP-00080515).

4. Identified COCs

- PCBs (detected)
- PAHs (detected)
- Copper (detected)
- Lead (detected)
- Mercury (used by subsequent operator, detected)

PCBs

No information for the use or presence of PCBs at the Clark Bloomfield facility was noted in the available file material. However, PCBs were detected at several Areas of Concern (AOCs) during remediation of the site. The maximum concentration of PCBs in site soil identified in the available references was 0.981 ppm at AOC 13/31 (Northeast Fill Area/ Raw Materials Storage Building), and was excavated in 2007 (PAP-00078776). A Draft Remedial Action Report and Remedial Action Workplan, dated February 1, 2010 (RAR RAW), concluded that the sporadic detections of PCBs at the Bloomfield site were not associated with site operations, but were likely the result of PCBs in historical building material formulations that were filled on site (such as caulk) (PAP-00079212). The 2010 RAR RAW noted that caulk used in buildings between 1950 and 1978 contained PCBs and concluded that the sporadic PCB exceedances “therefore may be associated with demolition debris from buildings constructed during this time period” (PAP-00079273).

According to the report on *Pollution Prevention and Management Strategies for Polychlorinated Biphenyls in the New York/New Jersey Harbor*, dated February 2005, standard industry practices for manufacturing of dyes and pigments could inadvertently produce PCBs in the order of micrograms/kilogram (µg/kg) (PAS-00027172). In addition, manufacturing of diarylide pigments and phthalocyanine crude and pigments produced or contained concentrations of PCBs that were high enough to cause concern with meeting the EPA’s ban on materials containing 50 ppm PCBs proposed in 1978. It was further stated by testimony of the Dry Colors Manufacturer’s Association (DCMA) that some pigment products contained more than 500 ppm PCBs at that time (PAS-00027247-50).

Information provided with DCMA’s testimony in 1978 noted that diarylide yellow pigment was patented in 1911 and used commercially starting in 1938 (PAS-00027327). Also, phthalocyanine blue and green pigments were introduced in the United States in the early 1940s (PAS-00027357). According to the National Paint and Coatings Association, diarylide yellow pigments were used in the textile industry (PAS-00027346). However, the available references provided for Clark included lists of dyes purchased in 1941 (PAP-00726415-19) and basic colors of dyes used for nylon thread in 1945 (PAP-007264525-26). The phthalocyanine blue and green and diarylide yellow pigments were not identified as being used at the site in the available file material for Clark.

Dioxins and Furans

According to the report on *Pollution Prevention and Management Strategies for Dioxins in the New York/New Jersey Harbor*, August 2006, approximately 40% of textile dyes and pigments are chlorinated or brominated compounds, and these compounds can lead to the formation of dioxins during dyeing processes possibly due to the high

temperatures and alkaline conditions during dyeing. The report identified potential releases to the environment from use of the pigments, inks, and dyes and the use (including washing of textiles), disposal, or recycling of the products (PAS-00027168).

According to the 1980 EPA report titled Dioxins: Volume III, Assessment of Dioxin-Forming Chemical Processes, temperatures at 145 degrees Celsius and higher can generate dioxins (PAP-00725710). Temperatures noted in Clark's recipes for dyeing silk and cotton thread were at or below boiling (212 degrees Fahrenheit/100 degrees Celsius) or less than 100 degrees Celsius (PAP-00725680; PAP-00725689; PAP-00728342-414). Note: 212 degrees Fahrenheit is less than 145 degrees Celsius, or 293 degrees Fahrenheit.

A NJDEP Remedial Investigation Report form, dated May 6, 2014, noted that dioxins had not been detected in any site media (PAP-00079478-9).

PAHs

A NJDEP Remedial Investigation Report form, dated May 6, 2014, noted that site soil was contaminated with PAHs (PAP-00079478-9).

According to 2014 Supplemental RIR, a large area of the property was contaminated by PAH compounds that were not attributable to site-specific operations. Instead, the report stated contamination appeared to be related to the Historic Fill materials (both soil and construction debris) that were contaminated prior to being used at the site to elevate the property (PAP-00079510-11). (See discussion of Historic Fill below for concentrations.)

Copper

Several documents identified copper sulfate as used as part of the dyeing processes used by Clark. However, the documents are undated, so it is not clear when or for how long these processes were used. In addition, information regarding the use of these procedures at the Bloomfield site specifically was not found in the available references. For example,

- An undated letter titled "Diazo Black" identified "1/7 pounds" of copper sulfate used per 1,000 pounds of thread. The author and recipient of the letter were not identified (PAP-00725678-79).
- The process for dyeing yarn using the "O.N.T Method of Dyeing Logwood Black" by the Clark Thread Co. identified the "Fixing bath" consisting of 1,000 gallons of water and 7 pounds of copper sulfate (PAP-00725680).
- Procedures labeled "Laboratory – Anchor Mills" listed copper sulfate as used as part of the Aniline black dyeing method (PAP-00725683-84).
- Recipes for Aniline Black dyeing was provided in the *Dyeing With Coal-Tar Dyestuffs*, reprinted in 1947, and included copper sulfate and copper sulfide (PAP-00726424).

According to the Report of Martin Bide, Ph.D., Professor, Department of Textiles, Fashion Merchandising and Design, University of Rhode Island, Kingston, Rhode Island, dated April 2019, "After the year 1900, Clark Thread used virtually no copper or other metal salts, because alternatives to logwood and aniline black – namely, developed direct and sulfur dyes – were introduced around that year and were quickly adopted" (PAP-00726463). In addition, Dr. Bide stated that four direct dyes that were identified in 1941 purchase records contained copper, and that these dyes represented about 0.1% by weight of those dyes purchased (PAP-00726460).

A letter from J.&P. Coats, Ltd. to Clark in Newark, dated August 5, 1929, compared two dyeing procedures for "Diazo Fast Black C.G." used at the Newark plant (assumed to be dyed at Bloomfield based on the date) and at a Coats plant in Ferguslie. While the procedure at the Ferguslie used copper sulfate, it was noted that the Newark recipe did not (PAP-00726269).

Copper was detected in site soil at several AOCs. Copper was detected at a depth of 6 to 7 feet below ground surface (ft bgs) in historic fill below the parking lot in AOC 14 (1,880 ppm) and in AOC 20 (Broken Glass Fill Area) up to 3,000 ppm (PAP-00080469; PAP-00078116).

Lead

No information for the use or presence of lead at the Clark Bloomfield facility was noted in the available file material. Soil samples collected from several AOCs detected lead in site soil, including AOC 15 (Western Perimeter Fill Materials) up to 4,390 ppm (PAP-00080483). The 2010 Remedial Action Report attributed the elevated lead concentrations to historic fill (PAP-00079212). All soil results were below the NJDEP Historic Fill Database Summary maximum concentration of 10,700 ppm (PAP-00079273).

Mercury

No information for the use or presence of mercury at the Clark Bloomfield facility was noted in the available file material. However, mercury was used for thermometer manufacturing at SGA, the unrelated subsequent site operator. According to 2000 PAR, mercury was identified as hazardous material that was historically present at the facility (PAP-00080515).

Mercury was detected in site soil at several AOCs, including AOC 20 (Broken Glass Fill Area) up to 70.7 ppm (PAP-00078116).

Historic Fill

The Allocation Team has determined that the facility site is partially located on regional Historic Fill as designated by the NJDEP[1]. Based on the NJDEP Historic Fill Quadrangle No. 41 map, Historic Fill is located along the Third River and Spring Brook at the site, but when compared with the Sanborn map from 1938, Historic Fill does not appear to be located underneath the location of the mill building (PAP-00075242).

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury[2]. Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards[4]**.**

The levels of PCBs, PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00080483; PAP-00078116; PAP-00078653; PAP-00078642)

COCs Found In Onsite Soils	
COC	**Max Detected Concentration**
Lead	4,380 mg/kg
Copper	3,000 mg/kg
Mercury	70.7 mg/kg
Benzo(a)anthracene	175 mg/kg
Benzo(a)pyrene	134 mg/kg
Benzo(b)fluoranthene	115 mg/kg
Benzo(k)fluoranthene	124 mg/kg
Dibenzo(a,h)anthracene	40.4 mg/kg
Indeno(1,2,3-cd)pyrene	89.9 mg/kg
PCBs	0.981 mg/kg

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle No. 41 (NJDEP map identifying locations of recognized historic fill).
[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Oher Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHS and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: - PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

The 2014 Supplemental RIR attributed the PAHs contamination at the site to the Historic Fill materials (both soil and construction debris) that were contaminated prior to being used at the site to elevate the property (PAP-00079510-11).

An application for a Remedial Action Permit by Bloomfield Township identified Historic Fill and historically applied pesticides are present at the site and impacting groundwater such that a deed notice is required (PAP-00080220-8).

5. COC Pathways

Direct Discharge

A report by the PVSC, dated August 20, 1925, identified the Bloomfield plant as operating a wastewater treatment plant that discharged treated water to the Third River (PAP-00128116, 18). Wastewater was treated with lime, alum, sulfuric acid, and bleach, then allowed to settle before discharging the water to the brook (PAP-00726263). The June 11, 2003 Remedial Investigation Workplan reported that the Third River was a tributary to the Passaic River and formed the southern and eastern borders of the site. The Third River flowed southerly past the Site toward the confluence of the Third River and the Passaic River (PAP-00077783-84).

According to the *Final Draft Site Inspection Report*, dated March 30, 1990 (1990 SIR), the site is mostly flat, but slopes towards the Third River behind the paved area east of the buildings with increasing steepness downstream. The Third River flows through Bloomfield, Belleville, and a series of ponds in Nutley before entering the Passaic River more than 10 miles downstream (PAP-00080798).

A cost estimate submitted to the Manufacturing Committee New York and dated July 31, 1939 noted a break in the sewer west of the Dye House needed to be repaired. Waste from the Dye House was stated to be discharging into a brook (PAP-00725693). Based on the 1938 Sanborn map, the two brooks at the site were the Third River and Spring Brook, which flowed into the Third River (PAP-00075242).

The 1990 SIR reported that in 1988, sediment and surface water samples were collected from locations upstream, midpoint (adjacent to the facility discharge pipe), and downstream from the facility. PAHs and lead were attributed to off-site sources as both upstream and downstream sediment and surface water samples detected these compounds (PAP-00080806-07). Lead was detected at 7 ppb upstream and 5.2 ppb in both the midpoint and downstream samples. In sediment samples, PAHs were stated to have uniform concentrations upstream and downstream, and lead was detected at 46.6 ppm upstream and 34.1 and 17.3 ppm in the midpoint and downstream samples, respectively. Mercury was detected in the downstream sediment sample (0.35 ppm), but was also detected in upstream (3.1 ppb) and downstream (0.4 ppb) surface water samples (PAP-00080807).

According to Appendix 12 in the *Amended Preliminary Assessment Report*, dated June 11, 2003 (2003 PAR), sediment samples were collected again in 2000 from the spillway, adjacent to the drainage pipe, and 10 feet below the downstream edge of the property. The samples were analyzed for priority pollutants, and elevated concentrations of

copper, lead, and mercury were detected. However, the highest concentrations were detected in the upgradient sample (copper at 45 ppm, lead at 247 ppm, and mercury at 0.547 ppm) compared to the downgradient sample (copper at 6.48 ppm, lead at 27.1 ppm, and mercury at 0.463 ppm), so the concentrations were not attributed to the site operations (PAP-00076114, 69).

According to the 2014 Supplemental RIR, investigation of the stream and sediments did not find direct impact to the Third River from the contamination identified on-site (PAP-00079496).

Sanitary Sewer

There is no information regarding sanitary sewers in the available file material.

Storm Sewer

There is no information regarding storm sewers in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

There is no information regarding inspections in the available file material.

EPA performed a *Potential Hazardous Waste Site Preliminary Assessment* in 1982 in response to a complaint that mercury was disposed on-site in a shallow pit and surface water (PAP-00075885-8). An anonymous complaint dated January 27, 1984 alleged that unrelated subsequent site operator SGA was dumping mercury into the Third River next to their building (PAP-00075888, 96).

Violations

There is no information regarding violations in the available file material.

Permits

There is no information regarding permits in the available file material.

An application for a Remedial Action Permit by Bloomfield Township identified Historic Fill and historically applied pesticides as present at the site and impacting groundwater such that a deed notice is required (PAP-00080220-28).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- Final Draft Site Investigation Report, dated March 30, 1990 (PAP-00080793)

- Phase I and Phase II Environmental Site Assessments were performed from 1992 to 1993 (PAP-00075414, 606, 766)
- Remedial Investigation Addendum Report, dated December 23, 1998 (PAP-00080455).
- A Preliminary Assessment Report, dated August 17, 2000 (PAP-00080511).
- Progress Reports from 2000 and 2001 (PAP-00082107, PAP-00082382).
- Amended Preliminary Assessment Report, dated June 11, 2003 (PAP-00075221)
- Site Investigation Work Plan, dated December 2003 (PAP-00077851).
- Technical Review Panel Decision Document, dated June 23, 2004, documenting 41 AOCs at varying stages of remediation or no action (PAP-00078073)
- Remedial Action Workplan, dated June 11, 2003, was prepared for the site to be addressed by Clark and SGA (PAP-00077781).
- Remedial investigations performed for Clark and SGA were reported in a Remedial Investigation Report No. 2 with Proposed Remedial Investigation/Action, dated April 14, 2006, and a Remedial Investigation Report No. 3 with Proposed Remedial Investigation/Action, dated January 18, 2007 (PAP-00078095, PAP-00078610).
- Remedial investigation results for the AOCs addressed by Leo Realty were reported in a Remedial Investigation Report/Remedial Action Workplan, dated September 2007 (PAP-00078766).
- Draft Remedial Action Report & Draft Remedial Action Workplan (PAP-00078936).
- NJDEP No Further Action (NFA) letter, dated May 4, 2012; unrestricted use to the following AOCs: 2, 5, 6, 7, 9, 10, 11, 13, 14, 16/28, 17, 18, 26a, 26B, 26C, 27, 29A, 29F, 30/38, 31, 35, 36, 39, 40, and 44 (PAP-00079474-5).
- A Supplemental Remedial Investigation Report, dated May 2014, summarized the status of the 44 AOCs and submitted a draft Deed Notice for the contamination to be left on-site (PAP-00079489).
- Remedial Action Report, dated March 2017 (PAP-00080184)

Soil

Investigations at the site have identified 47 Areas of Concern (AOCs) (PAP-00079478). The AOCs where COCs have been detected in site soil and are not specifically related to SGA operations are discussed in the following subsections. Note that the sampling was performed after Clark's operations and ownership of the site.

<u>AOC 3 Concrete Pit</u>

A concrete pit located behind the main building and 10 to 15 feet deep was noted during a 1988 site investigation (PAP-00080797). According to the 1993 Phase II EA, the concrete walls were apparently removed and backfilled with sand when the building was demolished (PAP-00075825).

The Draft Remedial Action Report from February 2010 (2010 Draft RAR), discussed soil sampling performed in 2005 and 2007 that detected PAHs (benzo(a)anthracene [4.41 ppm], benzo(b)fluoranthene [3.79 ppm], benzo(a)pyrene [4.27 ppm], indeno(1,2,3-cd)pyrene [2.62 ppm], and dibenz(a,h)anthracene [1.40 ppm]) above the NJDEP

residential soil remediation standards (SRSs). PCBs (0.213 ppm) were also detected above the residential SRS (0.2 ppm) (PAP-00078990). The 2014 Supplemental RIR stated the PCB contamination was excavated in 2013 (PAP-00079497).

AOC 8 Mercerizing Building

The Remedial Investigation Report No. 3, dated November 2006, (RI Report No. 3) discussed delineation of PAHs contamination in soil samples collected from the footprint of the former mercerizing building. Maximum concentrations of the exceeding PAHs are provided in the table below (PAP-00078639-41). The 2014 Supplemental RIR noted the residual PAHs contamination was related to Historic Fill and would be addressed by the Deed Notice (PAP-00079500).

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	5 (1)	1.15	5.5
Benzo[b]fluoranthene	0.9	4	0.949	3.54
Benzo[k]flouranthene	0.9	3	1.44	3.69
Benzo[a]pyrene	0.66	7 (7)	0.694	4.41
Indene[1,2,3-cd]pyrene	0.9	3	0.777	2.0
Dibenz[a,h]anthracene	0.66	1 (1)	0.789	0.789

All results given in parts per million
(1) = Number of samples exceeding the NRDSCC

(PAP-00078641)

AOC 10 Bleach House

According to the Technical Review Panel (TRP) Decision Document, PAHs were detected above residential RSRs in one soil sample collected in 2000 from within the building footprint: chrysene (10.8 ppm), benzo(a)anthracene (14.2 ppm), benzo(b)fluoranthene (15.2 ppm), benzo(k)fluoranthene (4.3 ppm), indeno(1,2,3-cd)pyrene (4.2 ppm), benzo(a)pyrene (11.6 ppm), dibenz(a,h)anthracene (1.3 ppm). The contaminated area was delineated and excavated (PAP-00078080).

The 2014 Supplemental RIR stated that exceedances of the SRS were still noted in the post-excavation samples, but these concentrations were attributed to Historic Fill, and the NJDEP Technical Review Panel approved no further action for this AOC on May 4, 2012 (PAP-00079500).

AOC 12 Southern Fill Area

As reported by the 2010 Draft RAR, three types of fill material were found in this area: glass fill, construction debris consisting of wood and brick, and roofing material. Soil samples detected isolated lead (707 ppm at TP-1) and widespread PAHs contamination. The areas of glass fill were excavated in 2007 (up to 25 cubic yards of soil at TP4 and 225 cubic yards at TP1 and TP2) to address the lead contamination, but sidewall samples still detected lead (455 to 1,770 ppm) and PAHs above the residential SRSs (concentrations at one location were slightly below the maximum concentrations reported below with the exception of benzo(a)anthracene at 170 ppm; PAP-00078992).

Exceeding concentrations in the west sidewall indicated that contamination extended off-site to the west (PAP-00078951-54).

In addition, as discussed in the 2006 RI Report No. 3, the fill was appeared to extend to the top of the bank of the adjacent Third River. The maximum PAH concentrations detected were at sample location TP1A (see table below; with the exception of benzo(a)anthracene, detected at 170 ppm in 2007; PAP-00078992). Samples collected from the base did not exceed the residential SRS, which was used to support the conclusion that contamination was related to the fill material. The 2014 Supplemental RIR noted contamination left on-site would be addressed by the deed notice (PAP-00079500-1).

Compound	RDCSCC	TP1A	TP3A	TP4A
Benzo[a]anthracene	0.9	144	50.1	1.99
Chrysene	9	145	51.4	< RDCSCC
Benzo[b]fluoranthene	0.9	115	42.6	1.76
Benzo[k]flouranthene	0.9	124	46.7	1.47
Benzo[a]pyrene	0.66	134	53.3	1.72
Indene[1,2,3-cd]pyrene	0.9	89.9	1.66	1.03
Dibenz[a,h]anthracene	.66	40.4	14.9	< RDCSCC

All results given in parts per million
Shaded results also exceed the NRDSCC

(PAP-00078642)

AOC 13 Northeast Fill Area/AOC 31: Raw Materials Storage Building

According to the 1993 Phase II EA, AOC 13, a 10,000 square foot fill area of brick rubble and soil, was Area IIB in 1993. Soil samples collected from the surface detected lead (285 mg/kg) and PAHs [phenanthrene (8.4 mg/kg), fluoranthene (15.0 mg/kg), pyrene (9.0 mg/kg), and chrysene (7.8 mg/kg)] (PAP-00075819).

According to a September 2007 Remedial Investigation Report/Remedial Action Work Plan (2007 RI Report), AOC 13 was combined with AOC 31 and several other AOCs of demolition debris and soil piles. This report discussed the combination and sorting of materials in AOC 15 Western Perimeter Fill Area, AOC 19 Soil Pile, AOC 21 Concrete and Soil Pile, AOC 23 Debris Piles at Mercerizing Building, and AOC 24 Debris Piles at Bleachery Building. These piles were formed in 1989 when the buildings were demolished by Leo Realty. The 2007 RI Report stated that the soil at AOC 13/31 was kept separate from the rest of the material because it contained PCBs slightly above the NJDEP Soil Cleanup Standard (PAP-00078772-73). The PCB contaminated soil (0.981 ppm) was excavated in 2007 (PAP-00078776).

AOC 14 Parking Lot Fill Area

According to the 1993 Phase II EA, the fill under the parking lot was reportedly soil obtained from construction of the Garden State Parkway in the 1950s (PAP-00075819). The fill was sampled and two hotspots of heavy metals contamination were found. Copper and lead were detected at maximum concentrations of 1,880 and 1,470 mg/kg, respectively, 6 to 7 feet bgs. PAHs were stated to be detected at trace concentrations (PAP-00075820). The 2014 Supplemental RIR noted additional PAHs were detected in

post-excavation samples, but attributed these concentrations to Historic Fill that would be addressed by the Deed Notice (PAP-00079502).

AOC 15 Western Perimeter Fill Materials

Also known as Area IV, this area was investigated in the 1993 Phase II EA. The fill area was 16,000 square feet and an average depth of 4 feet. Benzo(a)anthracene (21 mg/kg), chrysene (concentration not reported), benzo(b)fluoranthene (17 mg/kg) benzo(k)fluoranthene (14 mg/kg), benzo(a)pyrene (17 mg/kg) and lead (306 mg/kg) were detected above the “soil cleanup criteria” in the site soil (PAP-00075821).

The 1998 RI Addendum Report reported lead detected at 4,380 ppm in one sample collected as a delineation sample for the previous lead result (PAP-00080483).

AOC 16 & 28 Building Annex Fill Area/Process Vessels

The 1993 Phase II EA identified fill material extending to a depth of 4 ft bgs within the footprint of the former office annex. The material is described as brick rubble and soil. Soil samples collected from test pits in the fill material resulted in elevated concentrations of lead (123 ppm) and PAHs: phenanthrene (99 mg/kg), fluoranthene (140 mg/kg), pyrene (130 mg/kg), benzo(a)anthracene (68 mg/kg), chrysene (79 mg/kg), benzo(b)fluoranthene (44 mg/kg), benzo(k)fluoranthene (43 mg/kg), benzo(a)pyrene (55 mg/kg), and indeno(1,2,3-cd)pyrene (29 mg/kg) (PAP-00075822).

According to a Progress Report dated December 15, 2000, the building annex was constructed at some point between 1950 and 1977. Debris from the demolition of surrounding houses was used to fill the property for this construction. PAHs results from sampling of the fill exceeded the most stringent SCC, but samples from soil beneath the fill did not exceed, indicating contamination was confined to the fill material (PAP-00082114-15).

As reported by the Remedial Investigation Report No. 2 with Proposed Remedial Investigation/Action, dated April 14, 2006 (2006 RI Report No. 2), during excavation of the demolition debris, two cast iron vessels (AOC 28) were discovered. Sampling from under the vessels did not detect PAHs and had low levels of metals, and the RI Report No. 2 proposed no further action for the site (PAP-00078113-14, 30).

AOC 18 Historic Stream Channel

This area was identified from examination of historical aerial photographs. According to the 2006 RI Report No. 2, the 1948 photograph showed a drainage ditch that was not present in the 1940 or 1951 aerial photographs. Excavation of a test pit in the area found a small portion of soil that exhibited an odor, but no fluvial or fill material was identified (PAP-00078114). Sampling of this soil detected PAHs, including benzo(a)anthracene at 1.1 ppm, benzo(k)fluoranthene at 0.977 ppm, benzo(a)pyrene at 1.1 ppm, benzo(b)fluoranthene at 0.773 ppm, indeno[1,2,3-cd]pyrene at 0.604 ppm, and dibenz[a,h]anthracene at 0.295 ppm. The soil was excavated and the sample from the underlying soil did not exceed the residential SRS (PAP-00078114-15, 31).

AOC 20 Broken Glass Fill Area

As discussed in the 2006 RI Report No. 2, this area was 0.25 acres in the wooded northwest portion of the site. Soil samples collected in 1993 found elevated metals concentrations, including copper (3,000 ppm), lead (414 to 1,690 ppm), and mercury (19.9 to 70.7 ppm). This area was excavated in 2000 and 2001, and post-excavation samples did not detect concentrations above the residential SRS; therefore, no further action was proposed for this AOC (PAP-00078115-18, 33).

AOC 26: Waste Piping

According to the 2010 Draft RAR, several waste pipes were identified on-site during investigation of the pipe beneath the former concrete pit (AOC 3) on August 16, 2005. The results from a sample of solid material in this pipe (Pipe 1) detected elevated levels of mercury (103 ppm). Pipe 1 was removed in 2007 and found to terminate at the concrete box (AOC 44) (PAP-00078955). Soil samples of the surrounding material did not detect PAHs or PCBs, and metals concentrations were below the residential SRS (PAP-00078956). Pipe 13 was a terra cotta pipe encased in concrete that also contained sludge with elevated mercury (209 ppm). Surrounding soil did not contain elevated contaminant concentrations (PAP-00078961).

Additionally, the 2010 Draft RAR reported that Pipe 3 was a terra cotta pipe north of and parallel to Pipe 1. Three soil samples obtained from the 0-6 inches increment beneath the pipe detected PAHs benzo(a)pyrene (0.692 and 0.24 ppm), benzo(b)fluoranthene (0.630 ppm), and benzo(a)anthracene (0.805 ppm) above the residential SRS, but were noted to be addressed by the Deed Notice. Elevated mercury was also detected at 22.7 ppm and the impacted soil was removed. Post-excavation samples did not detect mercury above the residential SRS (PAP-00078957-8).

AOC 29: Loading/Unloading Areas

Several loading zones were identified for the various buildings that were used on-site. The 2006 RI Report No. 3 identified the following loading/unloading areas where COCs were investigated: AOC 29B (northeast corner of former bleach house), 29C (eastern side of former chlorine building), 29D (southeast corner of the former bleach house), 29E (northwest corner of the former mercerizing building), and 29G (southeast corner of the former mercerizing building) (PAP-00078643-49).
All areas showed detections of PAHs above the residential SRS. Maximum concentrations for AOC 29C, 29D, 29E, and 29G are shown below from the tables provided in the 2006 RI Report No. 3. PAHs contamination at AOC 29B was only up to 1.17 ppm (benzo[a]anthracene) (PAP-00078644). According to the 2014 Supplemental RIR, PCB contaminated soil of an unidentified concentration was removed from 29C (4 feet by 4 feet, and 4 feet deep) (PAP-00079505).

29C Loading/Unloading Area at the Eastern Side of Former Chlorine Building

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	5 (2)	1.45	37.6
Chrysene	9	1	28.5	28.5
Benzo[b]fluoranthene	0.9	5 (2)	1.17	26.8
Benzo[k]flouranthene	0.9	5 (2)	1.01	23.1
Benzo[a]pyrene	0.66	6 (6)	1.31	31.1
Indene[1,2,3-cd]pyrene	0.9	5 (2)	1.34	16.6
Dibenz[a,h]anthracene	0.66	2 (2)	2.4	6.9

All results given in parts per million
(2) = Number of samples exceeding the NRDSCC

(PAP-00078646)

29D Loading/ Unloading Area at the Southeast Corner of Former Bleach House

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	1	1.37	1.37
Benzo[b]fluoranthene	0.9	1	1.04	1.04
Benzo[k]flouranthene	0.9	1	0.91	0.91
Benzo[a]pyrene	0.66	2 (2)	.77	1.19

All results given in parts per million
(2) = Number of samples exceeding the NRDSCC

(PAP-00078648)

29E Loading/ Unloading Area at the Northwest Corner of Former Mercerizing Building (addressed by Deed Notice)

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	13 (5)	1.05	90.0
Chrysene	9	2 (1)	11.2	69.5
Benzo[b]fluoranthene	0.9	12 (4)	1.0	64.7
Benzo[k]flouranthene	0.9	12 (3)	1.09	43.3
Benzo[a]pyrene	0.66	13 (13)	.91	64.9
Indeno[1,2,3-cd]pyrene	0.9	11 (3)	1.03	29.5
Dibenz[a,h]anthracene	0.66	5 (5)	.71	9.44

All results given in parts per million
(1) = Number of samples exceeding the NRDSCC
(PAP-00078649)

29G Loading/Unloading Area at the Southeast Corner of Former Mercerizing Building

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	13 (2)	.93	18.2
Chrysene	9	1	13.0	13.0
Benzo[b]fluoranthene	0.9	12 (2)	1.1	11.0
Benzo[k]flouranthene	0.9	11 (2)	.96	12.7
Benzo[a]pyrene	0.66	15 (15)	.73	14.8
Indeno[1,2,3-cd]pyrene	0.9	7 (1)	.99	6.46
Dibenz[a,h]anthracene	0.66	2 (2)	1.34	2.64

All results given in parts per million
(2) = Number of samples exceeding the NRDSCC

(PAP-00078651)

AOC 32 Building Southwest of Mercerizing Building

According to the RI Report No. 3, surface samples collected from within the perimeter of the former building exceeded the residential SRS. Additional sampling to a depth of 3 ft bgs was performed in 2006 (PAP-00078652), and PAHs exceeded in these samples as well. The maximum reported concentrations are below:

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	11 (1)	1.05	175
Chrysene	9	1 (1)	115	115
Benzo[b]fluoranthene	0.9	10 (1)	1.21	102
Benzo[k]flouranthene	0.9	9 (1)	.902	116
Benzo[a]pyrene	0.66	15 (15)	.74	131
Indeno[1,2,3-cd]pyrene	0.9	9 (1)	.93	64.4
Dibenz[a,h]anthracene	0.66	1 (1)	17.5	17.5

All results given in parts per million
(1) = Number of samples exceeding the NRDSCC

(PAP-00078653)

AOC 34: Sump Pit

As discussed in the RI Report No. 3, a site map from 1951 identified a sump pit located in the basement. The area of the former sump pit was investigated in 2005 with soil samples collected from the surface (PAP-00078653). Benzo(a)pyrene was detected above the SRS and additional sampling to 3 ft bgs was performed in 2006. PAHs concentrations exceeded the residential SRS in 5 of 17 samples with maximum detections as follows (PAP-00078654):

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	3	.98	1.33
Benzo[b]fluoranthene	0.9	2	1.06	1.15
Benzo[k]flouranthene	0.9	1	1.0	1.0
Benzo[a]pyrene	0.66	5 (5)	.70	1.24

All results given in parts per million
(5) = Number of samples exceeding the NRDSCC

(PAP-00078654)

AOC 37: Dye Storage and Matching Room

As discussed in the 2014 Supplemental RIR, this room was part of the former Mercerizing Building. Characterization and delineation activities identified PAHs at concentrations above the residential SRSs beneath the footprint of the former building (PAP-00079508). The RI Report No. 3 noted that two soil samples were analyzed for metals and detected lead up to 53.5 ppm, copper up to 24.0 ppm, and mercury up to 0.397 ppm (PAP-00078735). Additional soil samples were collected and analyzed for PAHs, a maximum PAHs concentrations in soil sample were as follows:

Compound	RDCSCC	# of Samples > RDCSCC	Minimum Exceedance	Maximum Exceedance
Benzo[a]anthracene	0.9	6	1.21	3.03
Benzo[b]fluoranthene	0.9	6	.79	2.39
Benzo[k]flouranthene	0.9	5	1.12	2.22
Benzo[a]pyrene	0.66	6 (6)	1.1	2.74
Indeno[1,2,3-cd]pyrene	0.9	5	.92	1.4

All results given in parts per million
(x) = Number of samples exceeding the NRDSCC

(PAP-00078656)

AOC 41 & 42: Buried Asbestos/Parking Lot Area between AOC 1 and AOC 14

As identified by the 2014 Supplemental RIR, these AOCs were merged during remedial actions performed in 2007 due to their close proximity to each other. The 2014 Supplemental RIR stated that copper and PAHs were initially detected at concentrations above the applicable residential soil standards. The October 2007 excavation activities mitigated the metal-impacted soil (PAP-00079509).

AOC 43 Suspected Wastewater Treatment Tank West of Former Bleach House

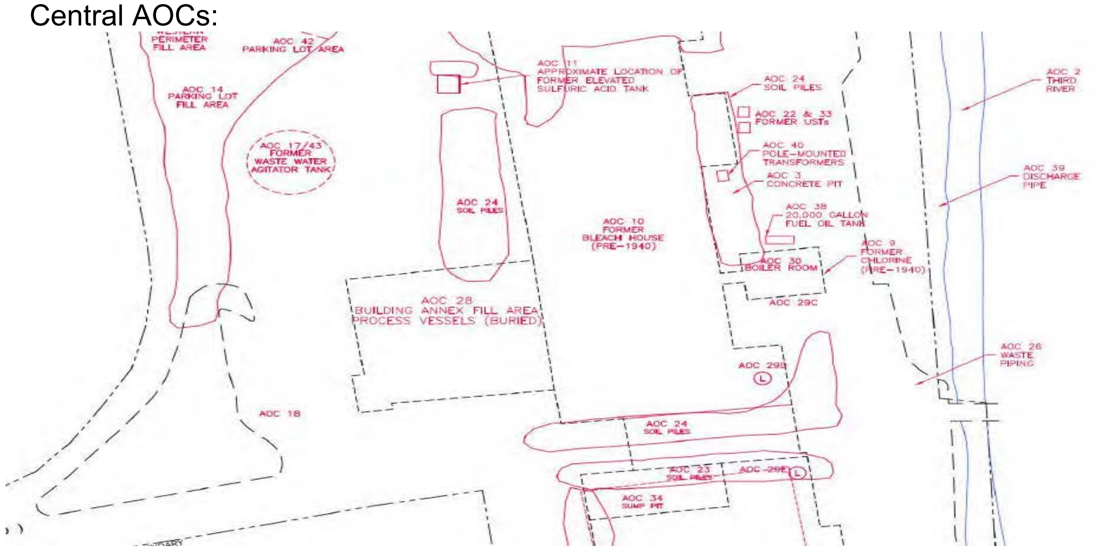
According to the 2014 Supplemental RIR, the entire concrete base of the tank was observed to be of sound construction, with the exception of the area that had been removed during the previous remediation activities in AOC 14. The fill material (wood, metal and soil) overlying the tank removed for a total of 516.62 tons of soil removed and disposed from this AOC. Soil sampling did not detect concentrations above SRS (PAP-00079509).

Greenway Characterization

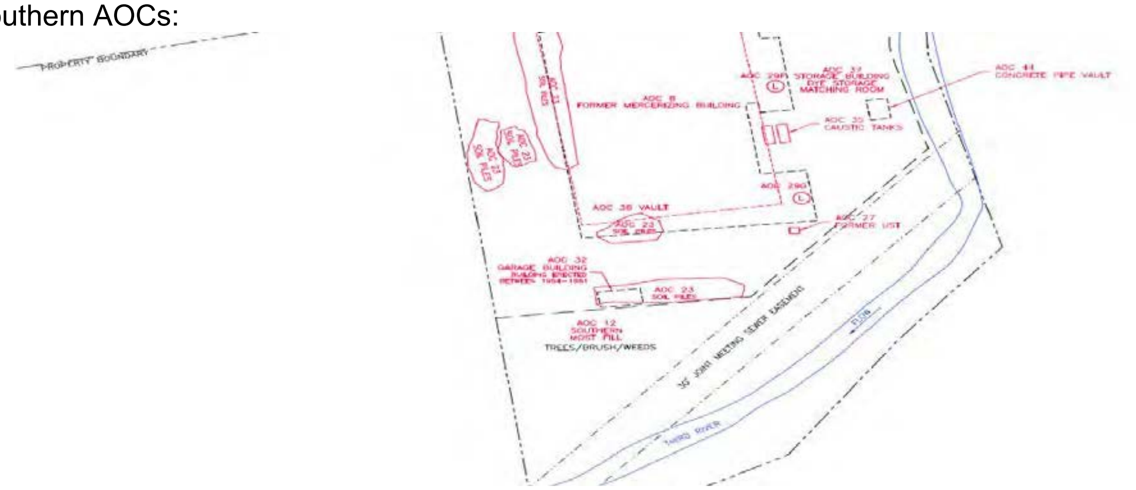
In 2012, surface soil sampling was performed to determine if the area adjacent to the former development was impacted by Historic Fill contamination. Lead was detected at 763 ppm, above the residential SRS, in one sample. A 4 feet by 4 feet area was excavated and lead was detected below the residential SRS. PAHs were also detected above the residential SRSs, but were noted to be addressed by the Deed Notice (PAP-00079510).

Northern AOCs: (PAP-00079525)

Central AOCs:



Southern AOCs:



Sediment and Surface Water

Sediment and surface water samples were collected in 1988 and 2000 from locations upstream, midpoint (adjacent to the facility discharge pipe), and downstream from the facility. It was concluded that surface water and sediment concentrations were not attributable to site conditions, because contaminants were detected in both upstream and downstream sediment and surface water samples. In addition, in 2000, the highest concentrations were detected in the upgradient sediment sample (copper at 45 ppm, lead at 247 ppm, and mercury at 0.547 ppm) compared to the downgradient sediment sample (copper at 6.48 ppm, lead at 27.1 ppm, and mercury at 0.463 ppm) (PAP-00080806-07; PAP-00076114, 169).

Remedial Activities

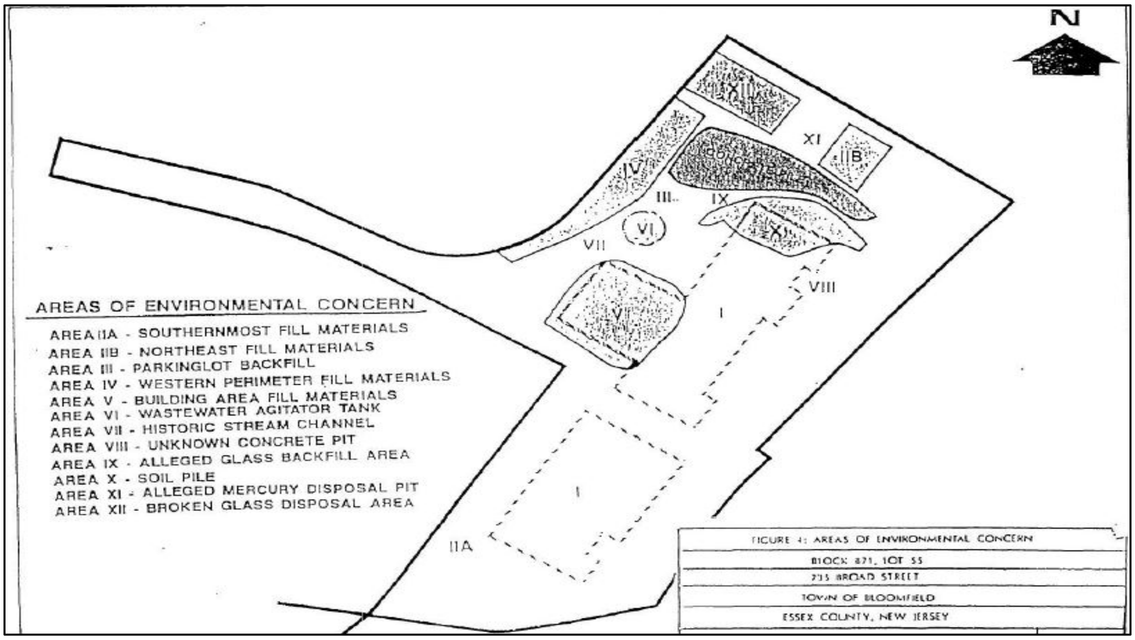
Investigation at the site was initiated in 1982 with a site inspection performed by the Environmental Protection Agency (EPA) in response to a complaint of previous on-site mercury disposal against SGA (PAP-00075885), the unrelated operator of the site after Clark. Another complaint was lodged in 1984, claiming the facility was discharging mercury into the Third River (PAP-0007588, 96). The subsequent inspection by NJDEP found that SGA was discharging cooling water and boiler blowdown to groundwater of the State (PAP-00075897). The facility then connected this discharge to the sanitary sewer (PAP-00075899).

In 1986, a Potential Hazardous Waste Site Preliminary Assessment was performed in response to the two complaints about mercury disposal at the site by SGA (PAP-00075883). The mercury disposal pit was noted to be a general dumping ground, as fragments of clay pipes and other wastes were observed (PAP-00075905). In addition, eight surface soil samples were collected along the Third River and analyzed for mercury. Only one sample collected near the Third River at the southern end of the site detected mercury at 0.04 mg/kg (PAP-00075918).

A Final Draft Site Investigation Report, dated March 30, 1990, documented the collection of five soil samples, three sediment samples, three surface water samples, and three groundwater samples during a site inspection performed July 26, 1988. The five soil samples were collected from areas of obvious disturbance at the northeast end of the site to address the mercury disposal pit (PAP-00080796); PAHs, lead, and mercury were detected in soil samples (maximums of 1.2 ppm, 87.8 ppm, and 0.68 ppm, respectively). Sediment and surface water samples were collected from locations upstream, midpoint (adjacent to the facility discharge pipe), and downstream from the facility. PAHs and lead were attributed to off-site sources as both upstream and downstream sediment (PAHs and lead) and surface water (lead) samples detected these compounds. Mercury was detected in the downstream sediment sample (0.35 ppm), but was also detected in upstream (3.1 ppb) and downstream (0.4 ppb) surface water samples (PAP-00080806-8).

Phase I and Phase II Environmental Site Assessments were performed from 1992 to 1993 and identified seven types of areas of concern: the former building foundations, areas of fill, former wastewater treatment plant, unknown concrete pit, glass backfill

area, soil pile, and the alleged mercury disposal area (PAP-00075791). Sampling of these areas was performed from July to September of 1993 (PAP-00075771). The 1993 Phase II EA identified twelve specific areas of environmental concern to investigate (see figure below) (PAP-00075791). Mercury, copper, and lead were detected in the broken glass area found on-site (PAP-00075845).



(PAP-00075791)

The Remedial Investigation Addendum Report, dated December 23, 1998, reported results for soil and groundwater samples collected from the fill to delineate metals and PAH contamination previously detected (PAP-00080459). A Preliminary Assessment Report, dated August 17, 2000, documented contamination at the site and identified areas of potential concern (PAP-00081270). Remediation of contaminated areas was performed and documented in Progress Reports from 2000 and 2001 (PAP-00082107, PAP-00082382).

In 2003, the Site Investigation Work Plan identified 38 Areas of Concern (AOCs) for the site (PAP-00077858-9). According to a Technical Review Panel Decision Document, dated June 23, 2004, there were 41 AOCs identified at varying stages of remediation or no action. A Memorandum of Agreement (MOA) had been executed October 28, 1993, with Leo Realty, the property owner/developer. This MOA was terminated and a second MOA was executed July 17, 2001, with Clark and SGA to address the contamination associated with their operations. A third MOA was executed August 6, 2003, with Leo Realty for several Areas of Concern (PAP-00078075).

A Remedial Action Workplan, dated June 11, 2003, was prepared for the site to be addressed by Clark and SGA (PAP-00077781). The AOCs to be addressed by Leo Realty included the areas associated demolition debris piles and with former USTs. A Site Investigation Workplan, dated December 2003, was prepared for these AOCs (PAP-00077856).

Results for the investigations performed for Clark and SGA were reported in a Remedial Investigation Report No. 2 with Proposed Remedial Investigation/Action, dated April 14, 2006, and a Remedial Investigation Report No. 3 with Proposed Remedial Investigation/Action, dated January 18, 2007 (PAP-00078095, PAP-00078610). Results for the AOCs addressed by Leo Realty were reported in a Remedial Investigation Report/Remedial Action Workplan, dated September 2007 (PAP-00078766).

In 2010, a Draft Remedial Action Report & Draft Remedial Action Workplan was prepared for ongoing remediation at several of the Clark and SGA AOCs (PAP-00078936). On May 4, 2012, the NJDEP issued a No Further Action (NFA) letter assigning unrestricted use to the following AOCs: 2, 5, 6, 7, 9, 10, 11, 13, 14, 16/28, 17, 18, 26A, 26B, 26C, 27, 29A, 29F, 30/38, 31, 35, 36, 39, 40, and 44 (PAP-00079474-5).

A Supplemental Remedial Investigation Report, dated May 2014, summarized the status of the 44 AOCs and submitted a draft Deed Notice for the contamination to be left on-site (PAP-00079489). The 2014 Supplemental RIR concluded that a large area of the property is contaminated with PAH compounds above the residential SRSs, and this contamination is not attributable to site-specific operations. Instead, the contaminants were suggested to be related to the use of fill materials (both soil and construction debris) that were contaminated prior to use at the site to level the property (PAP-00079510). All of the elevated concentrations of lead and PCBs in soil were delineated and removed through excavation activities in April of 2013. The low level metals and PAHs left in place were addressed with engineering and institutional controls (PAP-00079512).

A Remedial Action Report, dated March 2017, documented the engineering and institutional controls at the site, including a chain link fence, signage, and the Deed Notice (PAP-00080188).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

Facility Data Report

COATS & CLARK INC.

Facility Name, Address and Size: Clark Thread Company, 900 Passaic Ave, East Newark, New Jersey (East Newark mill); and 260 Ogden Street, Newark, New Jersey (Newark mill; note that Ogden Street is now McCarter Highway at this location; PAP-00726282). The facilities were located on either side of the Passaic River and across from each other (PAP-00726275) and were part of a single integrated mill that expanded from Newark to East Newark over time (PAP-00726430-31). The facilities ranged from 4.7 acres in 1865 to 17.1 acres in 1920 (PAP-00726273-86). There were 1,500 employees of Clark Thread Company in 1877 (PAP-00725688).

1. **Business Type:** Production of cotton thread, including combing, carding, spinning, winding, and twisting raw cotton into thread ("dry operations"). Thread was then washed, bleached, dyed and/or mercerized ("wet operations"), after which thread was finished and spooled for sale (PAS-00027138, PAS-00027119).

2. **Time Period of Ownership/Operations**

Operator: Clark Thread Company

Facility	From	To
Newark mill	1865	1947
East Newark mill	1880	1931

Owner: Clark Thread Company

Facility	From	To
Newark mill	1865	~1989
East Newark mill	1880	1935

Clark Thread Company (Clark) was started by George A. Clark and his brothers in 1865 as the Passaic Thread Co., according to *Records of The Clark Thread Co, thread manufacturers, Newark, New Jersey, USA*, from the University of Glasgow. The name was changed to Clark Thread Co. in 1866 (PAS-00027106). However, an undated document titled *History of the Clark Thread Company Newark in USA, Buildings Erected* noted that the original five-story Finishing & Spooling Mill was constructed on Passaic Street in Newark in 1860. The document listed the Spool Making Mill, Machine Shop, Cotton Stores, and Picker House as built at this location in 1865. In 1873, the Bleach & Dye House was built, and in 1880, an extended Spinning Mill & Dyehouse was constructed. According to this document, additional buildings were added to this mill complex through 1922 (PAP-00725685).

An article from a website on the Clark Thread Company Historic District, a U.S. National Historic Landmark District, identified the mill buildings in East Newark as built in 1875 (PAS-00027104). However, the undated document titled *History of the Clark Thread Company Newark in USA, Buildings Erected* noted the Spinning & Twisting Mills and Spool Making Mill on Passaic Avenue in East Newark were constructed in 1880. This document listed buildings constructed at this complex through 1922 and the "O.N.T" letters added to the stack in 1923 (PAP-00725686).

According to *Records of The Clark Thread Co, thread manufacturers, Newark, New Jersey, USA*, from the University of Glasgow, Clark merged with The Clark Mile-End Spool Cotton Co in 1917 (PAS-00027106).

A letter dated September 22, 1922, discussed a new dyehouse to be installed in Bloomfield (New Jersey), and noted that machinery and handboxes in use at the Newark and East Newark dyehouses could be transferred to Bloomfield (PAP-00725940-41).

An article on the history of the Borough of East Newark stated that Clark abandoned its East Newark operations in 1931 (PAS-00027135). An article on the Mt. Prospect neighborhood in East Newark from HelloChicago.com stated that Clark's East Newark operations were sold in 1935. This article also noted the operations were moved to the Clark plants in Georgia when the Newark factory was closed in 1947 (PAS-00027129).

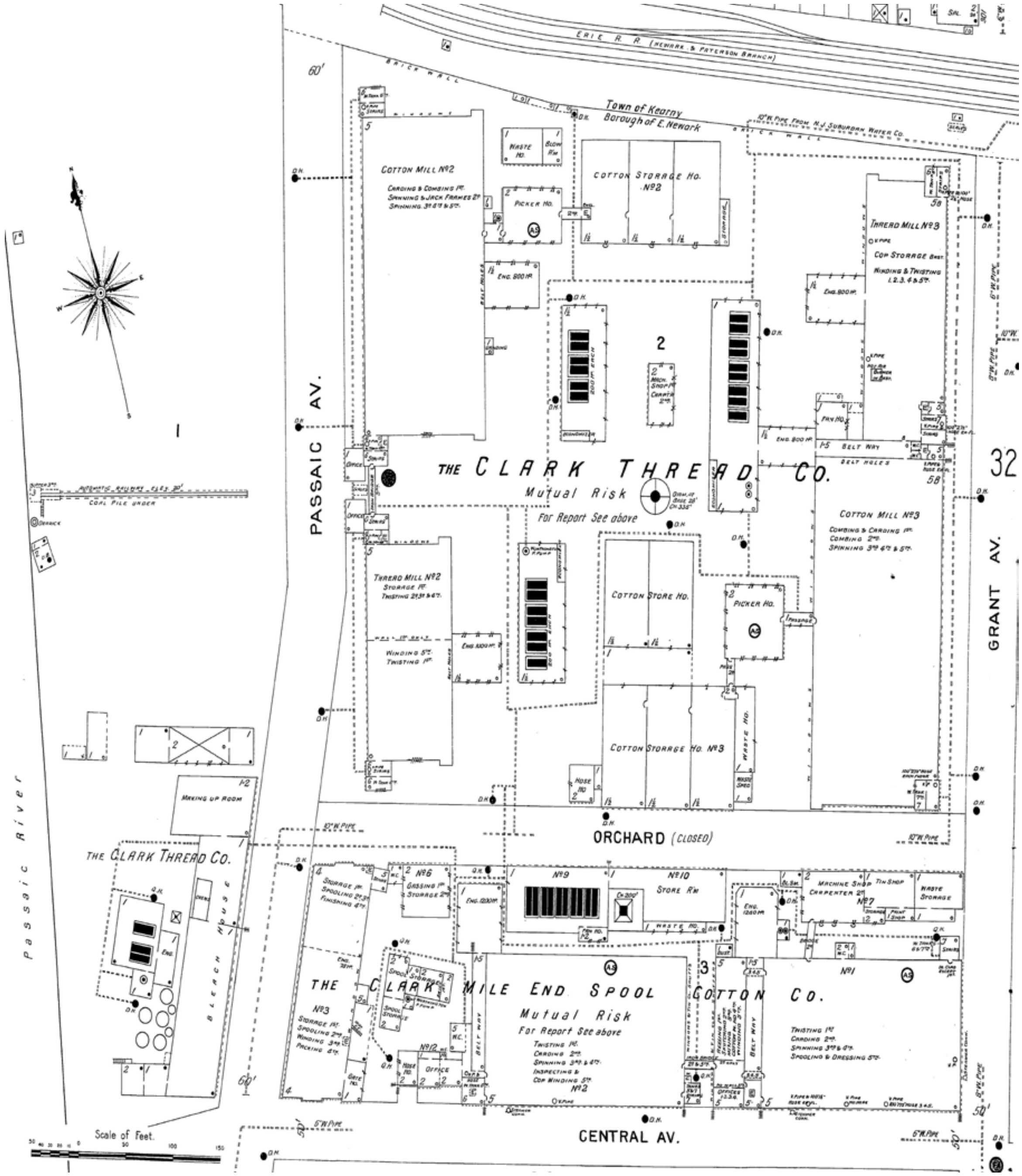
A patent was submitted by Clark in the 1940s for a traveler for ring spinning and twisting frames used in textile manufacture. The address for Clark was the Ogden Street address in Newark (PAS-00027075).

An online article from the Coats website listed J. P. Coats and the Clark Thread Co. as merging to become Coats & Clark Inc. in 1952 (PAS-00027111). Sanborn maps from 1973 and 1989 included a building at the Newark site between Passaic Street and McCarter Highway labeled as the Coats & Clark, Inc. Research Lab (PAP-00726279-80).

3. Operational History/COC Use and Presence at the Facility

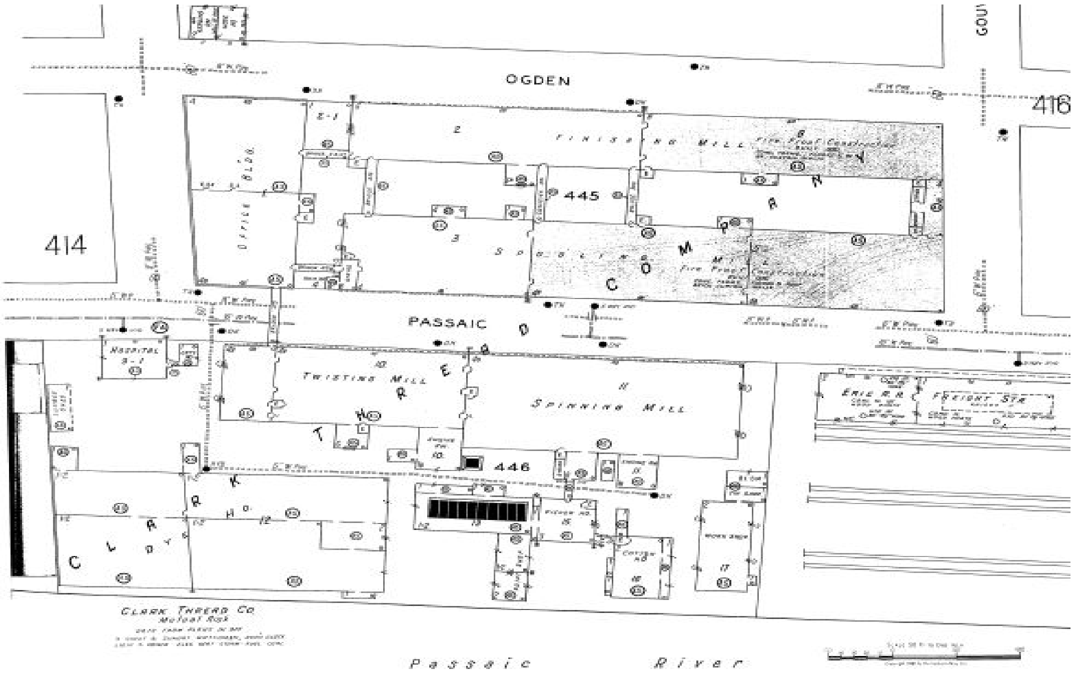
According to an article from the Coats.com website, in the 1860s, George Clark developed a six-cord, soft finished thread suitable for sewing machine use. The thread was called "Our New Thread," and became known as O.N.T., the trademark for the Clark Thread Company product (PAS-00027110).

According to a Sanborn map from 1907 (see below), Clark operated the East Newark mill complex on Passaic Avenue just east of the Passaic River, west of Grant Avenue, and south of the Erie Railroad. The complex included a cotton mill for combing, carding, spinning, winding, and twisting, as well as the thread mill for twisting and winding. Additional buildings are labeled as cotton storage and picker houses, and a bleach house was located west of Passaic Avenue and near the Passaic River. The complex also included the Clark Mile End Spool Cotton Company, which contained spooling, twisting, carding, and spinning operations. A machine shop, tin shop, and waste storage area were located at Orchard and Grant Avenue (PAS-00027138).



(PAS-00027138)

According to a Sanborn map from 1931, Clark operated a mill complex on Ogden and Passaic Streets in Newark. This complex included a twisting mill, spooling mill, spinning mill, and finishing mill. In addition, the dye house was located along the west bank of the Passaic River. Other smaller buildings included the paint shop, picker house, cotton house, work shop, tin shop, and a hospital (PAS-00027119).



(PAS-00027119)

A letter to Mr. Clark, dated January 10, 1905, discussed the Bleaching Department at an unidentified mill softened 2,095,193 pounds of thread in 1901, 2,482,035 pounds of thread in 1902, and 1,679,228 pounds in 1903 (PAP-00725692).

Several documents identified copper sulfate as used as part of the dyeing processes. However, the documents are undated, so it is not clear when or for how long these processes were used. In addition, information for the use of these processes at the Newark and East Newark sites specifically is not available in the references. For example,

- An undated letter titled "Diazo Black" identified 1/7 pounds of copper sulfate used per 1,000 pounds of thread. The author and recipient of the letter were not identified (PAP-00725678-79).
- The process for dyeing yarn using the "O.N.T Method of Dyeing Logwood Black" by the Clark Thread Co. identified the "Fixing bath" as consisting of 1,000 gallons of water and 7 pounds of copper sulfate (PAP-00725680).
- Procedures labeled "Laboratory – Anchor Mills" listed copper sulfate as used as part of the Aniline black dyeing method (PAP-00725683-84).

A Passaic Valley Sewerage Commissioners (PVSC) report dated August 20, 1925 identified Clark Thread Newark and East Newark as one of the parties abating pollution to the Passaic River by moving its dyeing and mercerizing operations from Newark to Bloomfield, where it was noted that a treatment plant was in operation. The report noted that as of August 1925, "the removal has not been entirely accomplished but will shortly be complete" (PAP-00128116, 18).

A letter from the PVSC dated February 6, 1926, documented the companies that polluted the Passaic River. "Clark's Thread Mill" in Newark and East Newark was listed as a firm known to be polluting the river at that time. The company's business was noted to be dyeing thread, and the pollution was identified as "weak dye waste" (PAS-00027177-78). This was reported to be resolved by November 28, 1926, when the PVSC letter report noted Clark Thread had completed its move of wet operations to Bloomfield (PAP-00129824).

An undated newspaper article from The Independent Press stated that the East Newark plant used to spin the thread until the plant in Georgia opened in 1930. The article also stated that all thread was bleached and dyed at the Bloomfield plant and then finished and boxed for the market at the Newark plant since 1930 or earlier (PAP-00725687).

A Remedial Investigation Report, dated February 24, 2017 (2017 RIR), investigated a 2.16-acre area west of Passaic Avenue in East Newark along the Passaic River. The site was investigated for BASF Catalysts, LLC, (BASF) who had owned and operated a chemical processing plant for precious and non-precious metals at the site in 2006 (PAP-00080248, 58). Based on the 1907 Sanborn map, this site was the former location of the bleach house when Clark owned the site prior to selling the property in 1935 (PAS-00027129, 38).

The 2017 RIR stated that the investigation included semi-volatile organic compounds (SVOCs) as potential contaminants of concern because thread making operations often used aniline dyes that were coal-tar based. However, there was no specific information in the historical records indicating SVOCs were used in Clark's operations at its bleach house location that became the BASF site. In addition, according to the RIR, the July 2009 Preliminary Assessment (PA) identified over 140 Areas of Concern (AOCs), but none of the AOCs were associated with the pre-1935 mill complex operations (PAP-00080258). SVOCs may include PAHs.

4. Identified COCs

- PCBs (detected)
- PAHs (detected)
- Copper (used, detected)
- Lead (detected)
- Mercury (detected)

PCBs

No information for the use or presence of PCBs at the Clark Newark facility was noted in the available file material. However, the 2017 RIR characterized and delineated PCB contamination in soil at the BASF site (former bleach house for Clark in East Newark). A cluster of detections was noted near the eastern property line (PAP-00080287). As reported in the 2017 RIR tables, the highest detection of PCBs in soil was 8.7 mg/kg (tables do not have Bates numbers; see p. 140 of 2017 RIR pdf). The RIR stated that none of the over 140 AOCs identified in the 2009 Preliminary Assessment were associated with the pre-1935 mill complex operations (PAP-00080258).

According to the report on Pollution Prevention and Management Strategies for Polychlorinated Biphenyls in the New York/New Jersey Harbor, dated February 2005, manufacturing of dyes and pigments could inadvertently produce PCBs in the order of micrograms/kilogram (µg/kg) (PAS-00027172). In addition, manufacturing of diarylide pigments and phthalocyanine crude and pigments produced or contained concentrations of PCBs that were high enough to cause concern with meeting the EPA's ban on materials containing 50 ppm PCBs proposed in 1978. It was further stated by testimony of the Dry Colors Manufacturer's Association (DCMA) that some pigment products contained more than 500 ppm PCBs at that time (PAS-00027247-50).

Information provided with DCMA's testimony in 1978 noted that diarylide yellow pigment was patented in 1911 and used commercially starting in 1938 (PAS-00027327). In addition, phthalocyanine blue and green pigments were introduced in the United States in the early 1940s (PAS-00027357). According to the National Paint and Coatings Association, diarylide yellow pigments were used in the textile industry (PAS-00027346). However, the available references provided for Clark included lists of dyes purchased in 1941 (PAP-00726415-18) and basic colors of dyes used for nylon thread in 1945 (PAP-00726425). The phthalocyanine blue and green and diarylide yellow pigments were not identified as being used at the site in the available file material for Clark.

Dioxins and Furans

According to the report on Pollution Prevention and Management Strategies for Dioxins in the New York/New Jersey Harbor, August 2006, approximately 40% of textile dyes and pigments are chlorinated or brominated compounds, and these compounds can lead to the formation of dioxins during dyeing processes possibly due to the high temperatures and alkaline conditions during dyeing. The report identified potential releases to the environment from use of the pigments, inks, and dyes and the use (including washing of textiles), disposal, or recycling of the products (PAS-00027168).

According to the 1980 EPA report titled Dioxins: Volume III, Assessment of Dioxin-Forming Chemical Processes, temperatures at 145 degrees Celsius and higher can generate dioxins (PAP-00725710). Temperatures noted in Clark's recipes for dyeing silk and cotton thread were at boiling (212 degrees Fahrenheit/100 degrees Celsius) or less than 100 degrees Celsius (PAP-00725680; PAP-00725689; PAP-00728342-414). Note: 212 degrees Fahrenheit is less than 145 degrees Celsius, or 293 degrees Fahrenheit.

PAHs

The 2017 RIR stated that thread making operations often used aniline dyes that were coal-tar based, so soil samples were analyzed for SVOCs. However, there was no specific information in the historical records indicating SVOCs were used in Clark's operations at its bleach house that became the BASF site (PAP-00080258). The results of soil samples collected from the BASF site stated only PAHs associated with Historic Fill exceeded the residential direct contact soil remediation standards. Since these concentrations were within the levels expected for Historic Fill, any PAHs contamination in soil was attributed to Historic Fill (PAP-00080272-73) (see discussion of Historic Fill

below for a comparison of concentrations). The 2017 RIR stated that none of the over 140 AOCs identified in the 2009 Preliminary Assessment were associated with the pre-1935 mill complex operations (PAP-00080258).

Copper

Several documents identified copper sulfate as used as part of the dyeing processes at Clark. However, the documents are undated, so it is not clear when or for how long these processes were used. In addition, information for the use of these procedures at the Newark and East Newark sites specifically was not available in the references. For example,

- An undated letter titled "Diazo Black" identified "1/7 pounds" of copper sulfate as used per 1,000 pounds of thread. The author and recipient of the letter were not identified (PAP-00725678-79).
- The process for dyeing yarn using the "O.N.T Method of Dyeing Logwood Black" by the Clark Thread Co. identified the "Fixing bath" as consisting of 1,000 gallons of water and 7 pounds of copper sulfate (PAP-00725680).
- Procedures labeled "Laboratory – Anchor Mills" listed copper sulfate as used as part of the Aniline black dyeing method (PAP-00725683-84).

The use of Diazo Black was discussed in a letter to Mr. J. O. M. Clark, dated May 10, 1905, but the location of the Dyeing Department that used this dye is not specified (PAP-00726437).

A letter from J.P. Coats to Clark in Newark, dated August 5, 1929, compared two dyeing procedures for "Diazo Fast Black C.G." used at the Newark plant and at a Coats plant in Ferguslie. While the procedure at Ferguslie used copper sulfate, it was noted that the Newark recipe did not (PAP-00726269).

A 1933 Light Fastness Report identified a group of "Benzo Fast Copper Colors" that had good light fastness. Identified colors included Diazo Black O.T. and several colors that were noted to be "aftertreated" with copper sulfate. The report was prepared by J.&P. Coats of Glasgow and was submitted with the subject line of "Newark and Pawtucket, Dyeing – Light Fastness Report for 1933," but it is unclear if the materials and colors tested came from or were used at Newark (PAP-00726287-92).

According to the *Manual for the Dyeing of Cotton and other Vegetable Fibres* from 1936, the "aftertreatment" process for direct dyes that used copper sulfate This process utilized a bath consisting of 1 to 3% copper sulfate, as well as acetic acid or formic acid. Goods were treated in the bath at elevated temperature (120 to 140 degrees Fahrenheit) for half an hour and then rinsed (PAP-00726339).

Recipes for Aniline Black dyeing was provided in the *Dyeing With Coal-Tar Dyestuffs*, reprinted in 1947, and included copper sulfate and copper sulfide (PAP-00726424).

According to the Report of Martin Bide, Ph.D., Professor, Department of Textiles, Fashion Merchandising and Design, University of Rhode Island, Kingston, Rhode Island,

dated April 2019, "After the year 1900, Clark Thread used virtually no copper or other metal salts, because alternatives to logwood and aniline black – namely, developed direct and sulfur dyes – were introduced around that year and were quickly adopted" (PAP-00726463).

Lead

No information for the use or presence of lead at the Clark Newark facility was noted in the available file material. However, soil samples collected from the BASF site in East Newark (former location of the Clark bleach house) detected lead. The maximum concentration of lead detected in site soil was 1,770 mg/kg (see pdf p. 140 of the 2017 RIR), but lead was noted to have been related to BASF site activities. Sampling of Historic Fill at the BASF site yielded a maximum concentration of 458 mg/kg (PAP-00080271-72). The 2017 RIR stated that none of the over 140 AOCs identified in the 2009 Preliminary Assessment were associated with the pre-1935 mill complex operations (PAP-00080258).

Mercury

No information for the use or presence of mercury at the Clark Newark facility was noted in the available file material. Soil samples collected from the BASF site in East Newark (former location of the Clark bleach house) detected mercury. The maximum concentration of mercury detected in site soil was 509 mg/kg. However, mercury was noted to have been found in drums and was listed on a waste inventory from the BASF site Preliminary Assessment (PAP-00080280-81, 369). The 2017 RIR stated that none of the over 140 AOCs identified in the 2009 Preliminary Assessment were associated with the pre-1935 mill complex operations (PAP-00080258).

Historic Fill

The Allocation Team has determined that the facility site is partially located on regional Historic Fill as designated by the NJDEP[1].

The portion of the Newark mill located east of Passaic Street and along the Passaic River was on Historic Fill. At the East Newark mill, Historic Fill was only found along the railroad tracks to the north and west of Passaic Avenue, along the Passaic River.

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury[2]. Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals,

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[1]*Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 & #53 (NJDEP map identifying locations of recognized historic fill).

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characterization of Ambient Levels of Selected Metals and Oher Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.

including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards[4]**.**

Sampling of soil at the BASF site (former bleach house at Clark's East Newark mill) was performed during the 2017 RIR (PAP-00080248, 58, 63).

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00080280, 92).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	1,770 mg/kg
Copper	588 mg/kg
Mercury	509 mg/kg
Benzo(a)anthracene	8.31 mg/kg
Benzo(a)pyrene	7.41 mg/kg
Benzo(b)fluoranthene	9.11 mg/kg
Benzo(k)fluoranthene	3.09 mg/kg
Dibenzo(a,h)anthracene	1.01 mg/kg
Indeno(1,2,3-cd)pyrene	4.44 mg/kg

5. COC Pathways

Sanitary and Storm Sewer

There is no information regarding sewer systems in the available file material.

Direct Release

A letter from the PVSC dated February 6, 1926 documented the companies polluting the Passaic River. "Clark's Thread Mill" in Newark and East Newark was listed as a firm known to be polluting the river instead of using a treatment plant or connecting to the sanitary sewer. The company's business was noted to be dyeing thread, and the pollution was identified as "weak dye waste" (PAS-00027177-8).

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[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHS and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: - PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

A report by the PVSC, dated August 20, 1925, and a PVSC *Report on the Status of Pollutions from Industrial Establishments*, dated November 28, 1926, noted that the pollution from the Newark and East Newark mills was abated when Clark moved the dyeing and mercerizing operations to the Bloomfield plant (PAP-00128118; PAP-00129824).

According to the Report of Dr. Bide, effluent from the scouring, bleaching, and mercerizing processes did not contain any COCs (PAP-00726447-49). Further, it was stated that textile mills in general used very dilute aqueous processes in which the ingredients were present in dissolved form. In the 1873-1949 timeframe, 40 to 110 gallons of water were typically used to produce one pound of thread (PAP-00726443).

Spills

There is no information regarding spills in the available file material.

6. Regulatory History/Enforcement Actions

Inspections

There is no information regarding inspections in the available file material.

Violations

A PVSC letter dated February 6, 1926 identified “Clark’s Thread Mill” in Newark and East Newark as polluting the river instead of using a treatment plant or connecting to the sanitary sewer (PAS-00027177-78). A PVSC report dated August 20, 1925 identified Clark Thread Newark and East Newark as one of the parties abating pollution to the Passaic River by moving its dyeing and mercerizing operations from Newark to Bloomfield. The report noted that as of August 1925, the removal has not been entirely accomplished but will shortly be complete’” (PAP-00128118). This was reported to be resolved by November 28, 1926, when the pollution at Clark Thread Mill, Newark was noted to be eliminated or abated as dyeing and mercerizing were moved to Bloomfield (PAP-00129824).

Permits

There is no information regarding permits in the available file material.

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facility:

- 2017 Remedial Investigation Report (PAP-00080258)

The 2017 RIR was performed on a portion of the East Newark mill, at the location of the former Clark bleach house and a metal processing plant owned by BASF. According to the 2017 RIR, none of the AOCs identified at this site were associated with the pre-1935 mill complex operations (PAP-00080258).

8. Summary of Asserted Defenses

No legal defenses were identified in the available file material.

Diamond Alkali OU2 Allocation

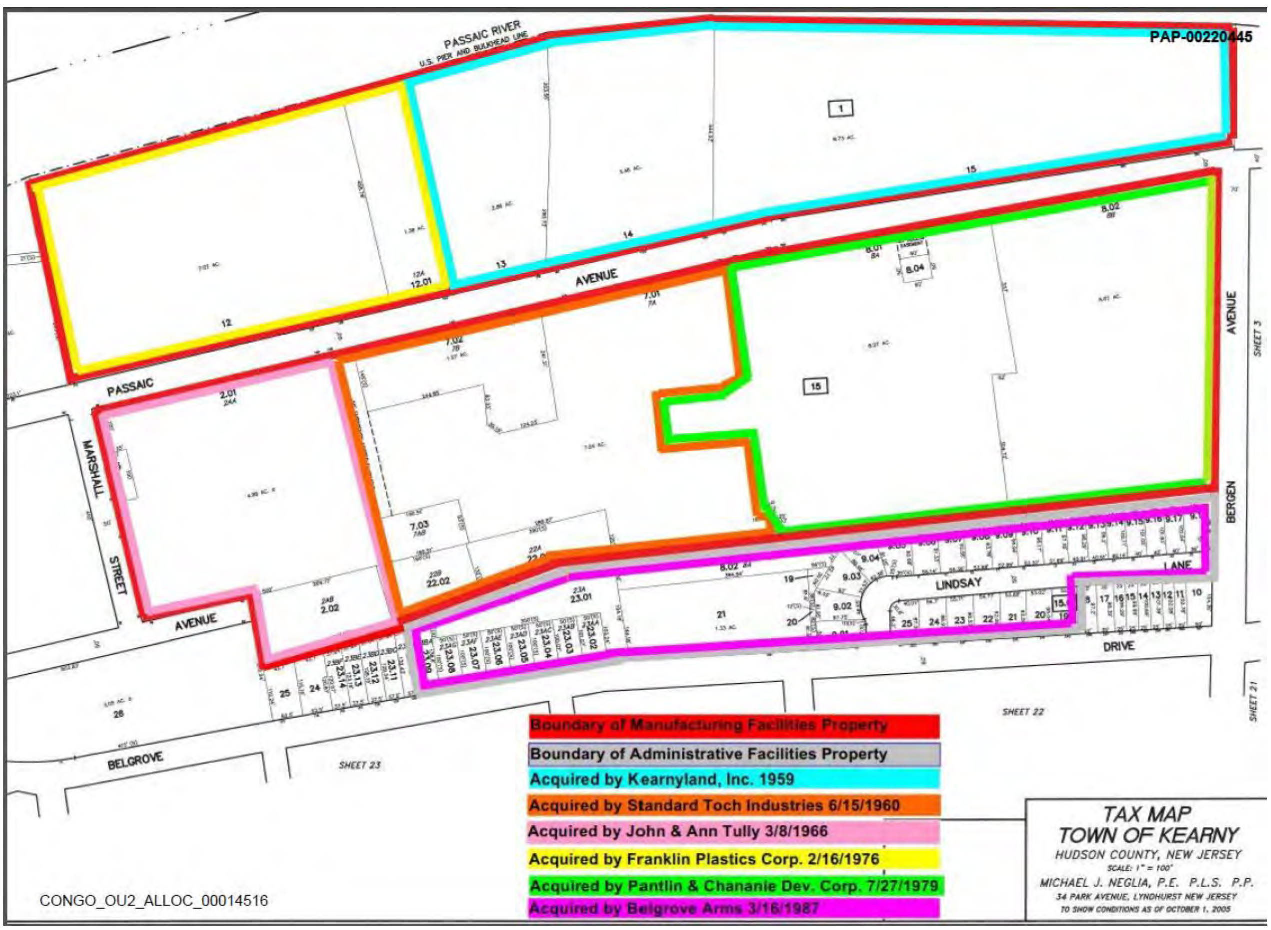
ADR Confidential

Facility Data Report

CONGOLEUM CORPORATION

Facility Name, Address and Size: The manufacturing facility formerly owned by entities named Congoleum located at 195 Belgrove Drive, Kearny, New Jersey, ("Kearny Facility") consisted generally of 6 parcels of property purchased over time (beginning in approximately 1886), and sold over time (beginning in 1959), with the last parcel being sold in 1987. All 6 parcels comprised approximately 66 acres (PAP-00233566-608). As reflected below in an Annotated 2005 Tax Map 5 of the parcels (outlined in **RED**) were used mainly in connection with manufacturing products (the "Kearny Manufacturing Facilities") and 1 parcel (outlined in **GREY**) was used for administrative purposes, housing an administrative building and a small lab. The Kearny Manufacturing Facilities were approximately 58.5 acres and the Kearny Administrative Facilities were approximately 7.5 acres (PAP-00724224).

The 2005 Annotated Tax Map shows that 4 of the Kearny Facility parcels were bordered by Belgrove Ave to the east, Passaic Avenue to the west, Bergen Avenue to the north and Marshall Street is to the south. In addition, 2 of the Kearny Facility parcels were located between Passaic Avenue and the Passaic River. The 2005 Annotated Tax Map identifies when the parcels were sold by various Congoleum entities, and the name of the purchasers.



(PAP-00220445)

In 1972, the facility (Kearny Manufacturing Facilities) employed 297 employees: 5 days a week; 1 shift per day producing linoleum and 2 shifts per day producing tile (PAS-00104990).

1. **Business Type:** Over the years, Congoleum entities manufactured straight line (plain, printed and inlaid) linoleum flooring, vinyl asbestos tile ("VT"), asphalt tile ("AT"), linoleum/vinyl wall coverings, vinyl desk tops, vinyl operating room flooring, pastes, waxes, adhesives and other materials and specific products for military use (tent cloth, aerial torpedo parts and grenades, mildew proof sandbags, linoleum, camouflage netting and synthetic leather, all manufactured for the military during World War II) at the Kearny Manufacturing Facilities Property (PAP-00233590; PAP-00403143).

2. **Time Period of Ownership/Operations**

Operator: Approximately 1886 – to 1974
Owner: Approximately 1886 – to 1979 (PAP-00220445)

Kearny Manufacturing Facilities

- Block 15, Lots 22.01, 22.02, 7.01, 7.02 and 7.03: Purchased by Congoleum entities in approximately 1886. (PAP-00220445).

- Block 15, Lots 2.01 and 2.02: Purchased by Congoleum entities in approximately 1886. This property was sold on March 8, 1966 to John and Ann Tully (PAP-00220431).

- Block 15, Lots 8.01, 8.02, and 8.04: Purchased by Congoleum entities in approximately 1886. This property was sold on July 27, 1979 to Pantlin and Chananie Development Corp., a New York Corporation, (PAP-00231009-012; PAP-00220428).

- Block 1, Lots 13, 14, and 15: Purchased over time by Congoleum entities beginning in 1886, with additional portions acquired in 1899, 1923 and 1924 (PAP-00448245-6; PAP-00448238; PAP-00448248; PAP-00448243). This property was sold by Congoleum entities to Kearnyland, Inc., prior to November 5, 1959 (PAP-00220437-40; PAP-00220445).

- Block 1, Lots 12 and 12.01: Purchased over time by Congoleum entities beginning in 1940, with an additional portion acquired in 1946 (PAP-00448252-56; PAP-0048259-60).). This property was sold on February 16, 1976 to Franklin Burlington Plastics. (PAP-00220445; PAP-00724242, 44, 50; PAP-00724224).

Kearny Administrative Facilities

- Block 15, Lots 8A, 9, 19, 20, 21 and 23A: Purchased by Congoleum entities in approximately 1886. This property was sold on March 16, 1987 to Belgrove Arms (PAP-00220445).

1886: Nairn Linoleum Company purchased a portion of the property making up the former Kearny Facility to manufacture plain imprinted linoleum (PAP-00233581).

1903: United Roofing & Manufacturing (United Roofing) organized as a wholly owned subsidiary of Barrett Co., Inc., and began manufacturing floor covering products in 1903 (PAP-00233581).

1911/1912: United Roofing began doing business as Congoleum Co., a division of Barrett Co., Inc. (PAP-00233581).

1916: Congoleum Corporation of PA was formed as a wholly owned subsidiary of Barrett Co., Inc., and all assets and liabilities of United Roofing were transferred to The Congoleum Corporation of PA (PAP-00233581).

1919: Congoleum Co., Inc. was formed, and all of the flooring business of Barrett Co., Inc., including The Congoleum Company of PA, was transferred to and operated as Congoleum Co., Inc. (PAP-00233581).

1920: Congoleum Co., Inc. purchased the stock of Farr & Bailey Manufacturing Co. (Farr & Bailey) (PAP-00233581).

1921: Congoleum Co., Inc. purchased Baltimore Roofing & Asbestos Co. (PAP-00233581-82).

1924: Nairn Linoleum Company merged with Farr & Bailey, and the company was renamed Nairn Linoleum Manufacturing Corporation. Nairn Linoleum Manufacturing Corporation was then acquired by and merged into Congoleum Co., Inc. The resulting company was named Congoleum-Nairn, Inc. (PAP-00233582). By deed dated October 31, 1924, Nairn Linoleum Company conveyed to Congoleum-Nairn, Inc. 19 parcels (PAP-00230958-68). Note: The deed does not provide the block or lot numbers only metes and bounds.

1940s: According to a Civilian Production Administration Report dated July 30, 1946, Congoleum-Nairn, Inc., was authorized to produce incendiary bombs, M-6 and M-7 grenades, fuses, torpedo air flasks and heads, and ammunition boxes between July 1940 and August 1945 (PAP-00232300).

1951: Congoleum-Nairn, Inc. purchased the following companies and/or assets between 1951 and 1968: Delaware Floor Products, Inc. (1951); assets of Sloan Blaban Corporation (1953); Patchogue Plymouth Mills Corp. and Loomweave Corp. (1955); Mersman Brothers, Inc. (1963); Lewis Carpet Mills (1967); Kinder Manufacturing Co. (1968) (PAP-00233582).

1956: There was a substantial reduction in the manufacture of straight line linoleum flooring at the Kearny Facility (PAP-00233590).

The production of straight line linoleum in Building 31 and Building 114 terminated in 1956 or 1957 (PAP-00724252; PAP-00403143).

1959: On November 5, 1959, Kearnyland, Inc. conveyed 2 parcels containing 8.7288 acres and 6.3165 acres, respectively to Vornado, Inc. a Kansas corporation (PAP-00220437-40). The 2005 Annotated Tax Map outlines this property in **BLUE** as Block 1, Lots 13, 14, and 15) (PAP-220445).

1960: On June 15, 1960, Congoleum-Nairn conveyed to Standard Toch Industries, Inc., a Delaware Corporation, Parcel 1 containing 2.2224 acres; Parcel 2 containing 3.1937 acres; Parcel 3 containing 5.1949 acres; and Parcel 4 containing 5.8599 acres (PAP-00220432-46). The property is outlined in **ORANGE** on the 2005 Annotated Tax Map as Block 15, Lots 22.01, 22.02, 7.01, 7.02 and 7.03 (PAP-00220445). This property was used by Bath-Congoleum entities in connection with the manufacture of linoleum (Building 31 and Building 114) (PAP-00724240; PAP-00724224; PAP-00724395; PAP-00403143). Following the sale of this property, the Kearny Manufacturing Facilities Property was reduced to approximately 23 acres (PAP-00724224).

1966: On March 8, 1966, Congoleum-Nairn conveyed a parcel of land to John and Ann Tully (PAP-00220431). The lot numbers are not available in the deed. The property is outlined in **PINK** on the 2015 Annotated Tax Map as Block 15, Lots 2.01 and 2.02 (PAP-00220445). This property was primarily operated by Bath-Congoleum entities as a recreational field (PAP-00724224; PAP-00724395). The Tullys and/or their successors ultimately developed this property as a “Shoprite” shopping center (PAP-00724224; PAP-00724395).

1968: Congoleum-Nairn, Inc., merged with Bath Industries, Inc., the merged entity changed its name to Congoleum Corporation (“1968 Congoleum”), and continued to own and operate the Kearny Manufacturing Facilities and Kearny Administrative Facilities (defined above) as they existed at the time of the 1968 merger (PAP-00219931-952).

On September 30, 1968, Congoleum-Nairn conveyed to Congoleum Industries two parcels of land (PAP-00230993-98). Note: The deed did not provide the block or lot numbers only metes and bounds, however, it can be concluded based on information provided that this conveyance was for the Kearny Facility.

1971: Linoleum manufacturing operations ceased in the early 1970s (PAP-0233590).

Tile manufacturing operations ceased in 1973 or 1974 (PAP-0233590). In a January 3, 1983 letter, Congoleum Corporation, Resilient Flooring Division stated that tile production had closed in the early 1970’s (PAP-00232303).

1975: On December 13, 1975, a Certificate of Ownership and Merger merging Congoleum Industries, Inc., a Delaware Corporation into Congoleum Corporation, a Delaware Corporation, was filed with the State of Delaware and the Resilient Flooring Operations were operated as a division of Congoleum Corporation (PAP-00231005-08; PAP-00233583).

1976: On February 16, 1976, Congoleum Corporation conveyed to Franklin Plastics, Block 1, Lot 12 (PAP-00220430). This property included Building 115, which was used by Bath-Congoleum entities in connection with the manufacture of AT and VT (PAP-00724242, 44, 50; PAP-00724224; PAP-00724395). Franklin Plastics and its successors used this property to operate a plastic manufacturing business that included, among other things, mixing various colorants, stabilizers and plasticizers with vinyl resin in a batch mixer to create an extruded plastic material (PAP-00055953).

1979: On July 27, 1979, Congoleum Corporation conveyed to Pantlin and Chananie Development Corp., a New York Corporation, Block 15 Lot 8 (PAP-00231009-012; PAP-00220428). This property is highlighted in **GREEN** on the 2005 Annotated Tax Map, and is identified as Block 15, Lots 8.01, 8.02, and 8.04 (PAP-00220445). This property was used by Bath-Congoleum entities in connection with the manufacture of linoleum (Building 2), linoleum cement (Building 8), and other products. (PAP-00724240-41; PAP-00724224; PAP-00724395; PAP-00403143). Pantlin and Chananie Development Corp., and/or its successors, ultimately developed this property as a strip mall and parking lot (PAP-00219971).

Following the sale of property to Pantlin and Chananie Development Corp., all “Kearny Manufacturing Facilities” property had been sold. The only Kearny Facility property that remained was the “Kearny Administrative Facilities” property (outlined in **MAGENTA** on the 2005 Annotated Tax Map (PAP-00220445).

1980-84: Between 1980 and 1984, 1968 Congoleum engaged in a series of corporate transactions that re-structured its businesses into different subsidiaries and divisions. As a result of this re-structuring, the assets and liabilities related to the Resilient Flooring Operations, including the liabilities associated with the Kearny Manufacturing Facilities, were transferred to a newly formed entity that was also subsequently named Congoleum Corporation (“1984 Congoleum”). 1968 Congoleum changed its name to Congoleum Industries, Inc. (“Congoleum Industries”) and remained as the parent corporation of 1984 Congoleum (as well as other subsidiary businesses as part of the corporate restructuring) (PAP-00402979).

1986: Congoleum Industries determined to sell the certain, defined assets of several of its wholly owned subsidiaries to third parties, including certain defined assets of 1984 Congoleum. The sale of the certain defined assets of 1984 Congoleum’s resilient flooring business was accomplished as follows:

1. 1984 Congoleum formed a new corporation on March 31, 1986 named Resilco, Inc. (PAP-00233561-3).

2. 1984 Congoleum then transferred to Resilco, Inc., the "Transferred Assets," defined as "all of the rights, properties, assets, and contracts . . . belonging to [1984] Congoleum and which are utilized in the business conducted by its Resilient Flooring Division on the date hereof . . . . ." (PAP-00402979; PAP-00219958-61).

3. Resilco assumed only those liabilities "directly related to the Transferred Assets existing as of the date hereof and the business conducted by [1984] Congoleum's Resilient Flooring Division on the date hereof." (PAP-00402979; PAP-00219958-61).

4. 1984 Congoleum transferred to Congoleum Industries all of the capital stock of Resilco and all of the rights, assets and businesses of 1984 Congoleum that were not transferred and assigned to Resilco, and Congoleum Industries expressly assumed "all other liabilities and obligations of [1984] Congoleum" that were not assumed by Resilco (PAP-00402979; PAP-00219953-7).

5. After completion of the transfer of those certain assets utilized in the resilient flooring business as of April 18, 1986, Resilco changed its name to Congoleum Corporation ("1986 Congoleum", aka Current Congoleum) (PAP-00402980; PAP-00233564-5).

6. Third party purchasers (Hillside Capital Incorporated) formed a new company named Resilient Acquisition Incorporated (PAP-00402980; PAP-00233553-7).

7. Resilient Acquisition Incorporated then "purchased" the Transferred Assets and assumed the liabilities "directly related to the Transferred Assets existing as of [April 18, 1986]" via a merger into 1986 Congoleum, aka Current Congoleum (PAP-00402980; PAP-0233382-489).

8. 1984 Congoleum merged into Congoleum Industries (the selling parent company), Congoleum Industries changed its name to BIW Industries, Inc. and then BIW Industries merged into Bath Iron Works Corporation ("BIW"). (PAP-00402980; PAP-00233558-60).

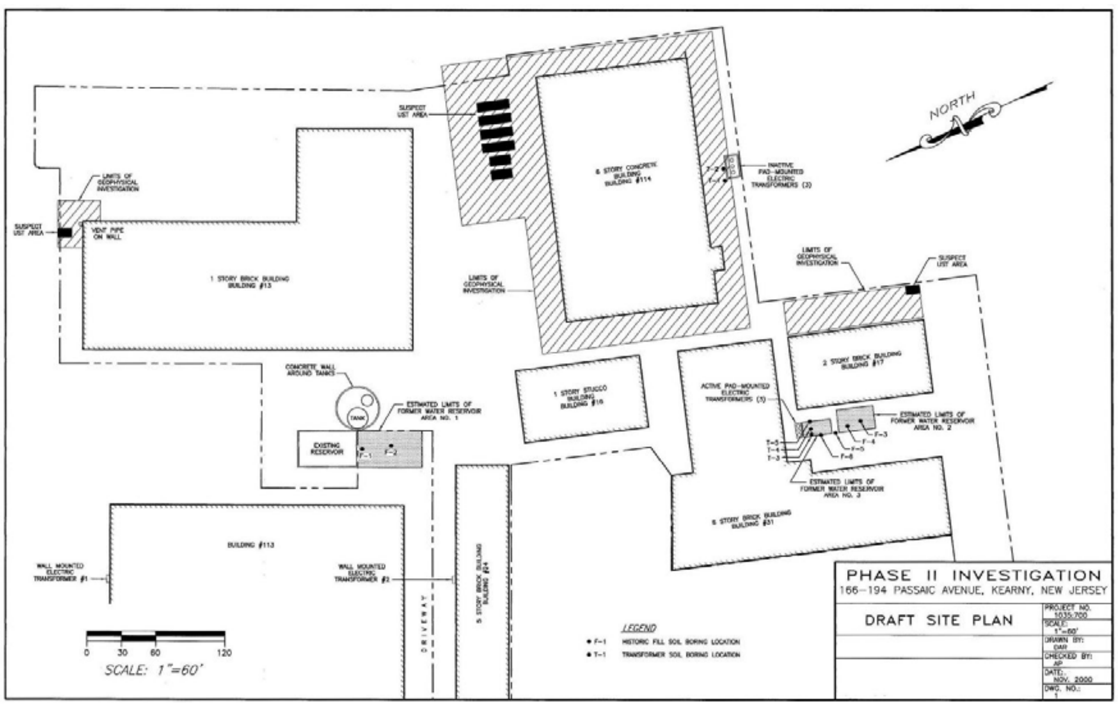
1987: On March 16, 1987, Current Congoleum conveyed to Belgrove Arms, a New Jersey General Partnership, lots 8A, 9, 19, 20, 21, and 23A in Block 15, outlined in MAGENTA on the 2005 Annotated Tax Map (PAP-00219963; PAP-00220445).

2003: Current Congoleum Corporation filed a petition for relief under Chapter 11 of the Bankruptcy Code on December 31, 2003 (PAP-00448162).

DVL Property Tenant History

As noted above, on June 15, 1960, the DVL Property was purchased from Congoleum-Nairn (PAP-00220432-46; PAP-00233641). These parcels are outlined in **ORANGE** on the 2005 Annotated Tax Map (PAP-00220445), and include Block 15, Lots 22.01, 22.02, 7.01, 7.02 and 7.03.

According to a 2000 Phase I ESA (PAP-00219965-427) and a 2002 RI Workplan Report (PAP-00220527-635) drafted by Peak Environmental, Inc., ("Peak") a DVL consultant, a portion of the DVL Property is an irregularly shaped parcel, 7.981 acres in size, located in a mixed commercial, industrial, and residential area of the Town of Kearny, Hudson County, New Jersey. At the time these reports were drafted, Peak noted that the property included eight buildings used for commercial, office, and storage space by DVL (PAP-00219969; PAP-00220533). The Peak reports also noted that seven structures were located on the site containing eight separate buildings identified as Building Nos. 12, 113,13, 24, 16, 114, 31, and 17 (PAP-00219972). Prior to the 1960 purchase of the DVL Property, these buildings were associated with straight line linoleum manufacturing operations of Congoleum-Bath entities (PAP-00219969; PAP-00220533). Since 1960, the buildings on the DVL property have been leased to various tenants, with associated driveways, loading/unloading areas, and parking lots (PAP-00219971). See the Site Plan below, which displays some, but not all of the DVL Property.



(PAP-00231560)

According to Peak, structures associated with the Congoleum facility north of the DVL Property (the property sold to Pantlin and Chananie Development Corp., highlighted in **GREEN** on the 2005 Annotated Tax Map (PAP-00220445) were demolished in the 1970's, and a strip mall and parking lot were constructed (PAP-00219971).

Information regarding entities that owned and/or leased space on the DVL property is summarized below:

- Talon Adhesives Co. leased portions of Building 114 and Building 31 from DVL from at least 1963 through at least the mid-1970s (PAP-00219985-986; PAP-00232838). Talon, which manufactured adhesives and stored them on site, purchased at least 120 pounds of Aroclor 1254 in 1966 and at least 1,800 pounds of Aroclor 1254 in 1968 (PAS-00104771; PAP-00207161-62, 87, 94). In 1963, Talon arranged to install four 10,000-gallon solvents tanks and two 6,000-gallon solvents tanks at Building 114 (PAP-00219985-986). Talon was also engaged in sloppy business practices resulting in documented releases, including from 55-gallon drums of waste chemicals stored on the DVL property (PAP-00219986).

- In a June 4, 1963 letter to the Kearny Fire Department, Double Bond Products Corporation (Double Bond) stated that they planned to occupy Building No. 114 of the DVL Property. Double Bond stated that “Red label” solvents will be consumed including hexane, toluol and methyl ethyl ketone. It was planned that a tank farm for 36,000 gallons would be installed (PAP-00232598).

- Nortech Adhesive Corporation (“Nortech”) leased property from DVL. (PAP-00233295; PAP-00232588). Nortech manufactured non-flammable no-red adhesive and red adhesive, both of which were likely to contain PCBs (PAP-00233295). In a June 7, 1978 letter to the Kearny Fire Department, Nortech stated that it would occupy half of Building No. 114 with the greater percent of manufacturing operation using non-red label adhesive (PAP-00232588). Handwritten correspondence dated August 18, 19 and 20, 1981 states that numerous chemical containers, drums, bottles and cans containing hazardous materials and “adhesive paper labels,” apparently abandoned by Nortech or Talon, remained within different areas of Buildings 31 and 114 in 1981 (PAP-00220352-5).

- According to a Certificate of Occupancy signed on June 12, 1992, Ameritraf Transformer Distributors was leasing Building No. 31. Ameritraf Transformer Distributors used Building No. 31 as a warehouse for new Power Transformers (PAP-00232306). In 1993 an inspection by Kearny Fire Department Bureau of Combustibles was attempted at Building No. 31 but the building was locked and it was noted that the company was out of business (PAP-00232305).

- According to the 2000 Peak ESA, Royal Arts is listed as a tenant of Building No. 13 in 1983 (PAP-00219986). Royal Arts is listed as the owner on a UST permit for a 550-gallon No. 2 fuel oil UST originally installed in 1973 (PAP-00219986). This UST corresponds with the presence of a vent pipe at the northeast comer of Building No. 13 as referenced in the report (PAP-00219986).

- According to a Preliminary Assessment Report for Munire Furniture, Block 15, Lot 7A prepared by Peak Environmental Inc., dated January 2008, (2008 Peak PAR) Munire Furniture occupied Building No. 113 from October 1995 until April 2007 (PAP-00231759). Operations at the facility included the cutting of wood to specified sizes, the staining and finishing of wood, and the assembly of furniture products. Finished products are transported, off-site to independent furniture retailers (PAP-00231773).

- Franklin Plastics leased 20,000 square feet of space on the DVL property (PAP-00724225, 30).

- Toch Brothers, located in Kearny, New Jersey, is believed to be a predecessor of DVL. Toch Brothers purchased 4,000 Pounds of Aroclor 1254 in 1962. (PAP-0040331).

3. Operational History/COC Use and Presence at the Facility

Congoleum-Bath manufactured straight line (plain, printed and inlaid) linoleum flooring, VT, AT, battleship linoleum, linoleum/vinyl wall coverings, vinyl desktops, vinyl operating room flooring, pastes, waxes, adhesives and other materials and specific and specific products for military use (tent cloth, aerial torpedo parts and grenades, mildew proof sandbags, camouflage netting and synthetic leather all manufactured for the military during World War II) at the Kearny Manufacturing Facilities property. Raw materials included vinyl resins, plasticizers, stabilizers, limestone, pigments, oils and fillers (PAP-00233590).

Between 1886/1888 and into, possibly, the early 1970s, the Kearny Facility manufactured six-foot rolled/straight line linoleum flooring (battleship linoleum, linoleum/vinyl wall covers, vinyl desktops and vinyl operating room flooring) (PAP-00233590).

Linoleum production at the Kearny Facility, took place in Building 2, Building 31, Building 114, and other areas of the Facility. (PAP-00724240; 50). Linoleum production at the Kearny Facility started in Building 2, and Building 31 was most likely built in the 1920's, when Congoleum-Nairn bought its straight line linoleum processing equipment, because Building 31 housed that equipment (PAP-00724250).

Linoleum products followed the same basic formula throughout the years, which generally included only natural ingredients, a "cement" - linseed oil- as a binder, fillers including wood flour, kauri gum, resins, cork and calcium carbonate (limestone), and color pigments. When linseed oil was used to produce linoleum, it was already gelled or partially oxidized, and was not a liquid (PAP-00724251). Lead may have been used in pigments as part of the production of linoleum (PAP-00233588).

Manufacturing that was done in Building 31 was straight line, meaning that the manufacturing equipment was arranged in a single straight line. The product went directly from the manufacturing equipment into an oven. Building 114 was a "stove" or "oven" building. The ovens had high walls in which the linoleum was hung, or

"festooned" on rollers to cure. No liquids dripped off of linoleum during its production, including the hanging in the stoves. The linoleum was like a soft dough but was not wet to the touch. The linoleum did not touch the floor or walls, which would have ruined the appearance of the flooring (PAP-00724251).

Between 1956 and 1957, the Kearny facility substantially reduced production of rolled/straight line linoleum as a result of declining consumer demand for linoleum. (PAP-00233590; PAP-00724252) Accordingly, it is very unlikely that any new linoleum product was introduced at the Kearny Facility at any time after 1950 (PAP-00724252).

Adhesives produced at the Kearny facility were standard floor adhesives that used lignin as anti-fungicide filler and small amounts of mercury as an antibacterial agent (PAP-00233591). In the 1950s, adhesives were manufactured in Buildings 8, 10, and 11. Waxes were carnauba-based waxes. Manufacturing of adhesives ceased in the mid to late 1960s (PAP-00233591).

From the late 1950s through until approximately 1973 and 1974, the Kearny Facility produced VT (PAP-00233590). VT was manufactured in Building 115 at the Kearny Facility. VT was never manufactured at any other area of the Kearny Plant (PAP-00724242).

The ingredients of VT before and after 1955 at the Kearny Facility generally included limestone, asbestos, non-fibrous talc, vinyl copolymer resin (Poly Vinyl Chloride and Poly Vinyl Acetate), a stabilizer (Liquid Nuodex 863-a barium/zinc compound), a plasticizer (Santicizer 160/butyl benzyl phthalate, epoxidized soybean oil and, possibly, benzaflex 988) and pigments (PAP-00724242, 53; PAP-00233590). Plasticizer was used in vinyl products to soften resins and to allow them to be processed more easily. Plasticizers were used in very small amounts in vinyl manufacturing at the Kearny Facility. Plasticizers were not used in linoleum manufacturing at all (PAP-00724252).

The VT manufacturing process before and after 1955 at the Kearny Facility involved weighing appropriate amounts of vinyl resin, plasticizer, stabilizer, and epoxidized soybean oil and placing them in a pre-blending mixer. These materials emerged from the pre-blending mixer in a slightly damp, sand like consistency. Limestone, asbestos and pigments were then added to the pre-blended material on a conveyor. The conveyor transported these ingredients to a Banbury mixer. In or about 1957, limestone and asbestos were added to the pre-blending process (PAP-00724242).

The VT product left the Banbury mixer in big chunks as a hard dough, which were then sent through a two-roll mixing mill that turned the chunks into a slab. The slab was then forced through two calendars that thinned the product to the final required gauge or thickness (PAP-00724242).

A 1972 Waste Effluent Survey stated that average production in 1971 was 4 million square yards of tile and linoleum and 800,000 gallons of paste and wax (PAP-00056085).

Pigments, including those containing heavy metals, would have been stored in bags, drums or other containers in which the pigments were supplied. There would not have been separate pigment waste. Because raw materials were used almost in their entirety in making finished product, very little, if any, raw materials would have been included in any waste streams (PAP-00233574, 88, 92).

The Kearny facility had a 60,000-gallon aboveground fuel oil tank that was diked, and Building No. 115 had five aboveground storage tanks that ranged in size from 10,000 to 80,000 gallons (PAP-00233597, 607).

Former Congoleum entity employee, Daniel Ross' affidavit claims that as a Crew Leader and Pipefitter, he recalled a container of very strong acid located at the northern end of Building No. 8 that had a fill pipe leading into and another pipe in the bottom of the container. Spent acid discharged into "some type of drain". According to Mr. Ross, machines such as calendars, Banbury mixers and sheeters were cleaned with kerosene, Varsol and other solvents. He also claimed firsthand knowledge that runoff from machine cleaning ran into floor drains located in each of the processing buildings (PAS-00058525). In Congoleum's January 15, 1998 response to EPA's Request for Information, Congoleum notes that a schematic indicates that Building No. 115 (Asphalt Tile Plant) had aboveground drains and an open pit or trench that ran through the building. The schematic also indicated that goods were spray cooled and the spray cooling drainage ran into the open trench and discharged into the Passaic River (PAP-00233595).

The Congoleum's January 15, 1998 Response to EPA's request for information also states that there was an 8-inch drainpipe to the River from a sump. Among other things, the sump collected water from a 6-inch drain that ran along the building and consequently was discharged to the River (PAS-00104963).

Former employee Daniel Ross also noted that large amounts of asbestos, pigments and cement were used in AT production carried out in Building No. 115, and runoff from cleaning operations (including machine cleaning operations) at Building No. 115 flowed into floor drains in the building (PAS-00058525). Mr. Ross did not state the time period that any of these allegation occurred. Mr. Ross' statements are refuted in affidavits executed by long-time Kearny facility employee Anthony N. Piacente (PAP-00724239-393).

Anthony N. Piacente was employed by Congoleum entities from 1955 to 1996. Mr. Piacente explained in two affidavits, one dated July 18, 2016, and another dated October 4, 2018, that he was initially employed by Congoleum-Nairn, Inc., at the Kearny facility as a Development Chemist from 1955 to 1958, then as a Works Chemist from 1958 to 1960, and Plant Superintendent from 1960 to 1965. (PAP-00724239, 42). In 1965, Mr. Piacente was promoted to the position of Manager of Process Development, which included responsibilities both within and outside of the Kearny facility. From 1965 to 1996, although his title changed over time, Mr. Piacente continued to perform similar duties and hold similar responsibilities relating to research, product development and manufacturing process development for flooring products, with increasing managerial responsibility and roles in company leadership (PAP-00724239).

Mr. Piacente noted that Linoleum manufacturing generally ran one shift each day and that cleaning of work areas was typically performed daily after each run. As the manufacture of linoleum did not generally involve liquids, Mr. Piacente explained that any spills during the manufacturing of linoleum would be either of dry compound or a mixed, dough-like material. As a result, Mr. Piacente stated that Kearny Facility personnel would use brooms and shovels to clean their work areas and remove any excess linoleum components. Refuse from the cleaning process was placed in containers and the containers were brought to a common area where they were placed in a larger receptacle for transport to an off-site dump (PAP-00724240).

In order to protect the integrity and quality of the final product, Mr. Piacente noted that no foreign material or water could come into contact with linoleum during the manufacturing and seasoning process. For this reason, the areas of linoleum manufacture were kept free of foreign materials and chemicals, and water hoses and other cleaning devices that might impact or otherwise contaminate the product were not used on the linoleum manufacturing equipment. Mr. Piacente did not recall ever seeing a water hose used in or near the linoleum manufacturing work areas or equipment at the Kearny Facility (PAP-00724240).

The only water involved with the manufacture of linoleum at the Kearny Facility was "non-contact" cooling water used to cool the manufacturing equipment. This non-contact cooling water was run through a closed system of sealed pipes connected to the manufacturing equipment. Mr. Piacente stated that the water in this system never made contact with the linoleum product or equipment (PAP-00724240-41).

Linoleum manufacturing equipment at the Kearny Plant, such as Banbury mixers, jerman mixers, mill rollers, scratchers, and calendars were cleaned with a "clean out" batch that was run after a change in product color was required. The "clean out" batch was typically the first batch of product in the next required color (PAP-00724241).

If the linoleum manufacturing machinery required further cleaning, it was wiped off. Contrary to Mr. Ross' statement, Mr. Piacente stated that machinery would never be "rinsed down" with any solvent, such as kerosene, Varsol or any other solvents. If additional cleaning was required, Kearny Facility personnel would sometimes hand wipe the machine equipment with a rag dampened with a small amount of solvent. The rag would then be placed in containers with refuse and disposed as described by Mr. Piacente above. Building 8 at the Kearny Plant was one of the areas where linseed oil and soybean oil were processed to make "linoleum cement." Linoleum cement was the main "binder" ingredient used to manufacture linoleum. Linoleum cement, which had a stiff, dough-like consistency, was stored on metal trays prior to use in the manufacturing process. After use, any linoleum cement that remained on the metal trays or other equipment was cleaned off by Kearny Facility personnel with rags containing an alkali solution of sodium hydroxide (PAP-00724241).

Mr. Piacente stated that while an alkali solution was stored in a tank in the area of Building 8, Building 8 was not used to store acid at any time--and he was unaware of any Kearny Facility personnel directing or otherwise releasing acid to a drain in or near Building 8 (PAP-00724241).

Water was supplied to the VT cooling tank by two artesian wells. Kearny Facility personnel cleaned the cooling tank approximately once a week, which involved draining water from the tank to a drain system. As the material that went through the cooling tank was uncut, finished product, the only material that could have been transferred to the tank might be very small pieces of finished and non-soluble VT (PAP-00724242-43).

Similar to the production of linoleum, non-contact cooling water was used to cool certain machines involved in the manufacture of VT in Building 115. The water was run through a closed system of sealed pipes connected to the manufacturing equipment and never made contact with the VT product or equipment (PAP-00724243).

In 1957, the VT production line in Building 115 was updated, but the general ingredients of VT remained the same. The primary 1957 equipment updates included a scratcher, consolidator, and an additional calendar. In addition, the VT cooling water tank was replaced with a water spray nozzle system. The water for the misting system was also sourced from two artesian wells (PAP-00724243).

During the updated VT manufacturing process, when the uncut, finished product emerged from the newly added third calendar, the material was cooled with a fine mist of water from numerous spray nozzles, which system used less water and also cooled the VT product at a faster rate. While the majority of misting cooling water evaporated, some water dripping occurred. Dripping water was collected under the VT production conveyor into a small reservoir that connected to a drain in the floor of Building 115. Water was supplied to the VT misting system by the same artesian wells that provided water to the older tank cooling system. Like the previous cooling system, the misting water contacted only uncut, finished product. Thus, as explained by Mr. Piacente, the only material that could have been transferred to the reservoir catching dripping water might be very small pieces of finished VT. After leaving the spray cooling area, styrene butylene type wax or a carnauba based wax was added to the surface of the product before it was cut with a press, inspected, packed and sent to the warehouse (PAP-00724243-44).

General cleaning of work areas and cleaning of VT manufacturing machinery was performed when a color change was required. Cleaning of VT production line work areas and equipment was generally performed with brooms, shovels and compressed air. Mr. Piacente specifically stated that VT machinery would never be “rinsed down” with kerosene, Varsol or any other solvents. If additional cleaning was required, which would be highly unusual, it was performed when the manufacturing process was non-operational by Kearny Facility maintenance personnel who would wipe the machinery with a rag dampened with a small amount of solvent and the rags were then disposed of as set forth above (PAP-00724244).

AT was also manufactured in Building 115 at the Kearny Facility in the same manufacturing line and using the same machines and equipment as VT, but some of the ingredients were different-- for example, petroleum resin and polystyrene based products, both in powder form, were used as the binder for AT production. AT was never manufactured at any other area of the Kearny Facility. The maintenance and cleaning procedures used to clean and maintain the AT manufacturing equipment were

the same used to clean and maintain the VT manufacturing equipment and work areas (PAP-00724244).

Mr. Piacente stated that linoleum, linoleum paste, VT, AT and other manufacturing operations at the Kearny Plant were run in a clean, efficient, orderly and professional manner. Cleanliness and attention to detail were emphasized as a matter of course, including for the purpose of keeping the products clean, undamaged and otherwise suitable for sale to the public (PAP-00724245).

Congoleum employees heard stories over the years, but had no personal knowledge that coal ash from the power plant may have been dumped and spread along the bank of the Passaic River, and scrap vinyl may have been buried in some areas of the facility (PAP-00233593).

A 1956 handwritten note and letter from the Kearny Fire Department documented poor housekeeping conditions at the south end Building No. 115, oil was being dumped in the weeds next to the building on the river side, and duct system above mixing machine disconnected at time of inspection; unspecified poor housekeeping on the north side in Building No. 23 (Sealer Mixing Building); and combustible materials that needed clearing in Building No. 31 (PAS-00058543-45).

According to a 1972 Waste Effluent Survey completed by Congoleum Industries, Inc. for the plant located at 160 Passaic Avenue, there was no discharge of lead, mercury, copper, or any other OU2 COCs (PAS-00058548, 51).

According to the Current Congoleum's January 15, 1998, response to the EPA's Request for Information, an Erie Railroad siding ran through the tile plant property (PAP-00233595).

According to an undated table; Lower Passaic re Kearny, NJ Sales Summary Analysis, in 1968 Congoleum purchased 110 pounds of Aroclor 1242 (PAP-00207161). The author of this table is unknown as well as where the information came from. Anthony N. Piacente who was employed at the Kearny Facility as a Development Chemist, Works Chemist, Plant Superintendent, Manager of Process Development and other positions, stated in his affidavit dated July 18, 2016, and October 4, 2018, that he was employed between the years 1965 to 1996, with responsibilities relating to research, product development and manufacturing process development for flooring products (PAP-00724239). Mr. Piacente reviewed the document "Lower Passaic re Kearny, NJ Sales Summary Analysis" and stated that he had no knowledge of the purchase of 110 pounds of Aroclor 1242 for manufacturing purposes, but it may have been used for research. Mr. Picante also stated that in 1957 or 1958, one trial batch of VT containing PCBs was run in Building 115 as a test trial to determine if a fire retardant flooring tile could be manufactured. The trial run was not successful, no further trials were performed, and no product with PCBs was ever manufactured at the Kearny Plant (PAP-00724245).

A November 8, 1943, study prepared by the United States Navy establishes that fire retardant linoleum manufactured by Congoleum entities during WWII, "Congoleum Nairn Fire Retardant Linoleum", did not contain PCBs (PAP-0220451).

Talon Adhesives, Inc., a tenant of Building 114 and Building 31 on the DVL property from at least 1963 through at least the mid-1970s (PAP-00219985-6; PAP-00232838) and Toch Brothers, a predecessor of DVL, purchased the following PCBs years after Congoleum-Bath sold the DVL Property:

Talon Adhesives (Kearny New Jersey):

- 120 pounds of Aroclor 1254 in 1966 (PAP-00403302);
- 1,800 pounds of Aroclor 1254 in 1968 (PAP-00207161-62, 87, 94);
- 500 pounds of Aroclor "Dist. 5460-HI SOL" in 1968 (PAP-00403303).

Toch Brothers (Kearny, New Jersey):

- 4,000 Pounds of Aroclor 1254 in 1962 (PAP-00403301).

Asphalt Tile Manufacturing Operations

According to the Congoleum-Nairn, Inc. AT Plant Suggested Improved Production Line with Notes and Comments report prepared by Congoleum's Engineering Department dated May 9, 1950 (1950 Asphalt Tile Plant Suggestions), the AT Plant (Building 115) had two production lines; one for manufacturing asphalt tile and one for manufacturing decorative stock. Manufacturing the asphalt tiles required: (1) processing binder; (2) mixing; (3) sheeting and calendaring; (4) die cutting; (5) cooling, inspecting, and packaging; and (6) crushing and grading process scrap for return to the Branbury mixer.

- Binder: Three 5,000 bound gas-fired batch fluxing kettles were used for fluxing and increasing the softening point of the binders. Large kettles heated by oil or other sources and with close clearance or scraping agitators may have been used. Two of the kettles were emptied by pumping, the third drains from the bottom. The hot binder was pumped to two 2,000-gallon hot binder storage tanks. The binder could also be fed directly to a Banbury mixer.

- Mixing: A skip hoist was utilized to charge all weighed materials to No. 11 Banbury mixer. Two skip loads are required per Banbury batch. The Banbury mixer discharged onto a steel apron conveyor. Sometimes the discharge batch fell in a large mass which was difficult to meter to the sheeter.

- Sheeting and Calendaring: Hot Banbury Mixed Base Stock after forming into full blanket around cold roll of a 28-inch diameter 48-inch face sheeter is decorated by applying about 5% crushed and screened stock. This stock is contained in storage hoppers above sheeter is spread evenly across the roll with a vibrating feeder. One full revolution of sheeter roll is made while applying the decorative stock.

- Die Cutting: A combination slitter and cross-cutter was used to cut tile to about 9.5 inches by 9.5 inches following which these rough-cut pieces were cut to size with 4 single die hopper feed presses.

- Cooling, Inspecting, and Packaging: To obtain required effective cooling, plain water was sprayed onto the top surface of the cut tile and this water evaporated by the forced air-cooling system. Stacked tiles were inspected on edges and any crumbs thereon were removed by a hand scraper. Cartons of packed tile were sealed with an automatic carton sealing and compression machine. Finished stock of tile was palletized for warehousing or shipment directly.

- Process Asphalt Tile Return System: Process scraps from cutting presses, inspection lines and other points were crushed by hand, and weighed out for return to the Banbury mixers (PAP-00725645-50).

All of the jacketed pumps, piping, fittings and meter, as well as hot binder tank coils were heated or cooled with saturated steam. According to the 1950 Asphalt Tile Plant Suggestions Report, if the recommendations were accepted, other production facilities required would include "adequate dust collection system; die maintenance equipment; materials handling equipment (PAP-00725644, 46, 51).

Raw Material Storage

According to Congoleum's January 15, 1998 response to EPA's request for information, raw materials used included vinyl resins, plasticizers, stabilizers, lime stone, pigments, oils, and fillers. Pigments, including those containing heavy metals, were stored in bags, drums, or other containers in which they were originally supplied. Oils, both raw material oils and fuel oils, were stored in above ground storage tanks (PAS-00104958, 60). According to the 1950 Asphalt Tile Plant Suggestions, binder materials were delivered by tank car to Building 115, where they were transferred to three 20,000-gallon heated and insulated tanks. All bagged raw materials at Building 115 were palletized on 4,000 capacity 48" x 48" double-faced pallets (PAP-00725645). The raw materials stored in the Asphalt Tile Building (Building 115) included, as of April 22, 1950, 203,000 pounds of asbestos and 1,100,000 pounds of limestone. Resins were stored in drums in the yard behind the Asphalt Tile Building as well as in heated tanks in the yard. Additional asbestos was stored in Building 3 and Gilsonite (a hydrocarbon resin) was stored in Building 19 (PAP-00725655).

Building 115 Storage Areas

According to the 1950 Asphalt Tile Plant Suggestions, Building 115 was divided into the following areas: Raw Materials in Building with Aisle Space (13,500 square feet (sq. ft.)); Packing Material (3-month supply) (3,500 sq. ft.); Finished Goods, with Loading Area and Aisle Space (9,500 sq. ft.); Binder Fluxing Room (2,500 sq. ft.); Production Equipment including Weighing Section and Operating Aisles (15, 500 sq. ft.); Materials in Process Decorative Stock and Scrap (2,500 sq. ft.); Repair Shop for Equipment and Dies, Spare Equipment Storage, Air Compressor and Deep Well Pump (3,400 sq. ft.); Wash Rooms and Locker Rooms (1,000 sq. ft.); Laboratory (1,000 sq. ft.); and Offices (600 sq. ft.) (PAP-00725654).

According to a figure stamped with the date July 14, 1975, the interior of Building 115 was divided into the main production area, a binder room, machine shop, offices, lab, and wash rooms/locker rooms. Directly to the southwest of Building 115, the figure shows five 10,000-gallon steel tanks used for asphalt and process oil storage. The figure also includes a drawing of two transformers behind a fence on the south side of the building separated from the Passaic River by a retaining wall. Notes on the figure state "Stge. Scrap Tile & Plasticizer in Drums" (in the area of the south side of Building 115) and "Stge. Scrap Tile 3' High" (in the area behind building 115) (PAP-00725633). A second, undated figure includes a drawing of Building 115 and a note stating "Scrap Tile in Drums Up to 9' High" and "Stge. Scrap Tile" (in the area behind Building 115) (PAP-00725634).

Transformers

Transformers were located on the 113 Passaic Avenue (Building 115) property during the time that Congoleum entities owned and operated on the property (PAP-00725660-61). A figure stamped with the date July 14, 175 includes a diagram of the Building 115 property and a drawing of "two 1,5000 k,v,a" transformers on the south side of the building separated from the Passaic River by a retaining wall (PAP-00725633). A December 2, 1968 letter directed to Frank B. Hall & Co., Inc., references a "Transformer Burnout, October 15, 1968 – 3 A.M., Kearny Plant" and notes that there will be no claim submitted as losses were less than $10,000. (PAP-00725631). The General Electric letter does not state that oil leaked or that oil was otherwise released from any transformers. (PAP-00725628-30). Additionally, a Congoleum-Nairn, Inc., purchase order dated October 28,1968 provides for the removal and return of a transformer to General Electric and installation of a "transformer from W.S. of Bldg. 115 in position where transformer is being removed." (PAP-00725627). An August 12, 1965 Congoleum-Nairn, Inc., purchase order and an August 5, 1965 "Maintenance Appropriation" form describe work involving replacement of 10C oil in two transformers located at Building 115 during a plant shutdown. (PAP-00725660).

4. Identified COCs

- PCBs (used, and detected)
- PAHs (used, detected)
- Copper (detected)
- Lead (potentially used, and detected)
- Mercury (used and detected)

PCBs

Anthony N. Piacente, who was employed by Congoleum entities at the Kearny Facility as a Development Chemist from 1955 to 1958, as a Works Chemist from 1958 to 1960, Plant Superintendent from 1960 to 1965, and then Manager of Process Development and other titles which included responsibilities both within and outside of the Kearny Facility until operations at the Facility ceased, stated in his July 18, 2016 and October 4, 2018 affidavits that he had no knowledge of PCBs ever being used to manufacture any product at the Kearny Facility (PAP-00724239-40, 44-45, 53). Based on his years of experience and knowledge of raw materials, formulations, and processes used to manufacture flooring products generally, and those used to manufacture flooring products at the Kearny Facility specifically, Mr. Piacente stated that to his knowledge,

PCBs were never used to manufacture linoleum, linoleum paste, VT, AT, adhesive, or any other product manufactured by any Congoleum entity at the Kearny Facility (PAP-00724239-40, 45).

Current Congoleum's January 15, 1998, response to the EPAs EPA's request for information noted that Congoleum entities did not receive, utilize, manufacture, discharge, release, store or dispose of PCBs at the Kearny Facility, aside from use in the transformers at the facility which may have contained PCBs (PAP-00233588). However, an undated table by an unknown author stated that Congoleum purchased Aroclor 1242 in 1968 at the Kearny Facility (PAP-00207161). Mr. Piacente stated that transformers at the Kearny Facility were routinely maintained and kept in good working order (PAP-00724253).

A 2000 Phase I ESA (PAP-00219965- PAP-00220427) performed by Peak Environmental, Inc., a consultant retained by DVL, identified a total of eight electrical transformers on the DVL Property (PAP-00219969-70). Two of the transformers were located on the outside walls of Building Nos. 12, and 24, respectively (PAP-00219969-70). The remaining six transformers consist of two separate groups of three pad mounted units, located south of Building No. 114 and west of Building No. 17 (PAP-00219969-70). These transformers were installed after Congoleum entities sold the property to DVL in 1960 (PAP-00724490; PAP-00724489).

A 2001 Phase II ESA performed by Peak Environmental, Inc., discussed sampling of the two electrical transformer pads located west of Building No. 17 and south of Building No. 114 (PAP-00231551). Two samples (T-1 and T-2) were collected from the north side of the transformer pad at Building No. 114, and three samples (T-3, T-4, and T-5) were collected adjacent to the south side of the transformer pad west of Building No. 17. Sample results showed Aroclor-1254 was detected at T-2 (1,950 mg/kg), T-3 (1,380 mg/kg), and T-4 (2,810 mg/kg). The samples were taken at the depth of 0-6" bgs (PAP-00231551, 8).

According to the 2008 RIR/RI/RAW performed by Peak, during the June 2001 excavation of Reservoir No. 2 (AOC-3), 11 pits, each approximately 2' by 2', were identified within the reservoir. It was discovered that five pits completely breached the 6-inch concrete flooring. Soil samples were taken from the five breaches and found that one sample breach (Pit 5-A at 1-1.5' bgs) showed Aroclor-1254 at 2.16 mg/kg (PAP-00232651). It is not known when the concrete floor in the reservoir was breached.

According to the 2008 Peak RIR/RI/RAW, based on the sample results discussed above, further Remedial Investigations were conducted at AOC-7 the Former Pad Mounted Transformer site. On October 27, 2003, four surface samples (TF-5 through TF-8 at a depth of 0.0 to .5") were collected from the eastern, northern, and western sides of the pad associated with the transformers located adjacent to Building No. 114. The results showed presence of PCBs above the applicable soil cleanup criteria within samples TF-6 (3,920 parts per billion (ppb)), TF-7 (927 ppb), and TF-8 (689 ppb) (PAP-00232624, 57).

The Self-Implementing Cleanup and Disposal of Polychlorinated Biphenyl (PCB) Remediation Waste Plan prepared by Peak Environmental, Inc., dated May 2015 (2015 Peak PCB Cleanup), noted that on March 25, 2015, sidewall and floor slab samples were collected from the nine bays within the first floor of Building No. 114. The results showed that Aroclor 1254 was detected in all 19 samples collected. Concentrations ranged from 0.0443 mg/kg (C-68) to 419 mg/kg (C-55) (PAP-00220930). Note: The concrete slab sample results are included in this report due to Peak's allegation that AOC-7 Former Pad Mounted Transformer was being impacted by the contamination inside Building No. 114. Further discussion can be found at the end of this section.

According to the 2015 Peak PCB Cleanup Amendment, AOC 23 - Dry Well and Swale sampling results of the concrete ranged from 1,938 mg/kg total PCBs in sample C-91 (Aroclor 1254 at 1,310 mg/kg and Aroclor 1260 at 628 mg/kg), located on the northeastern corner of the swale to Aroclor 1254 at 0.888 mg/kg (C-95) located on the southeastern corner of the swale (PAP-00223729, 66). The dry well and swale are located north of Building No. 114, which is one of the buildings leased and used by Talon Adhesives (PAP-00219985-986; PAP-00232838).

In addition, Peak reported that on June 26, 2015, adhesive samples were collected from an old, but undated foundation encountered below Building No. 31 foundation, another building where Talon Adhesives leased space (PAP-00219985-986; PAP-00232838). The results of the adhesive sampling showed significant PCBs concentrations of Aroclor 1254, ranging from 44,200 mg/kg to 1,240 mg/kg (PAP-00223729, 40). Aroclor 1232 was detected at a range of 1.51 mg/kg to 25.7 mg/kg on adhesive samples taken from the third floor of Building No. 31 (PAP-00223739).

In May 2015, soil samples collected to the north of Building No. 114 as part of the swale investigation detected Aroclor 1254 in the following samples:

- Test pits depth of 0.5-1' – 51.6 mg/kg and 5.68 mg/kg
- Storm Sewer-1 depth of 3.5-4' – 443 mg/kg
- Dry well near sump depth of 3-3.5" – 292 mg/kg (PAP-00223731, 56, 65)

Further investigation was conducted at AOC-7 Former Pad Mounted Transformer and Peak concluded that the observed PCB impacts in AOC 7 are associated with the historical activities conducted inside Building No. 114. Peak arrived at this conclusion because PCBs were not detected in the samples from the concrete pad and from the enclosure of the transformers and Aroclor 1254 was detected in the concrete samples from the walls inside Building No. 114 (PAP-00223731). Peak did not detail what "historical activities" conducted inside Building No. 114 are associated with the PCB impacts in AOC 7 (PAP-00223731).

Building 31 and Building 114 were used by Bath-Congoleum entities to manufacture straight line linoleum. PCBs were not used to manufacture linoleum, linoleum paste, or any other product at the Kearny Facility. (PAP-00724244-45).

PAHs

According to Congoleum's January 15, 1998 response to EPAs Request for Information, the Kearny Facility had a 60,000-gallon aboveground fuel oil tank that was diked, and Building No. 115 had five aboveground storage tanks that ranged in size from 10,000 to 80,000 gallons (PAP-00233597, 607).

In 1947, PVSC notified facilities of stream contamination. An oil sample collected near Bergen Avenue in September 1947 contained good fresh fuel oil that was traced to a Congoleum-Nairn Inc. engine room. The inspector found an open valve and considerable amounts of fuel oil that drained into the sanitary sewer. Closing the valve stopped the release into the sanitary sewer. The inspector noted that only small amounts of fuel oil had intermittently reached the Passaic River through the storm sewer as a result of intermittent overflow, and the Kearny sewer department was asked to clean out the sanitary sewer to prevent overflows (PAS-00058534).

Congoleum's January 15, 1998 response to EPA's Request for Information noted that current Congoleum employees believed but had no personal knowledge of a spill of No. 6 fuel oil in the winter of either 1973 or 1974 resulting from vandals opening a valve on a fuel oil tank at night (PAP-00233575). According to the response, the spill was discovered and cleaned up (PAP-00233575).

According to Congoleum's 1998 response to EPA's request for information, oils, both raw material oils and fuel oils, were stored in above ground storage tanks (PAS-00104958, 60). Note: Year and location of the above ground storage tanks was not provided in this document.

In June 1990, one waste composite sample (NJEP-S2) was collected from two of the drums. Mercury, copper, PAHs, and lead were detected in the sample. Mercury, copper, PAHs, and lead were also detected in the soil samples collected in the proximity of the two drums (NJEP-S1 and NJEP-S3) and near the solidified sludge (NJEP-S4) (PAP-00337325).

The 2001 Peak Phase II ESA identified one 550 gallon No. 2 fuel oil UST at Building No. 13 and six solvent USTs associated with Building No. 114. It was recommended that these be closed by following proper UST closure procedures (PAP-00231553-54). Peak noted that Royal Arts was listed as the owner of the 550 gallon No. 2 fuel oil UST which was originally installed in 173. Peak also noted that in 1963, Talon arranged to install the six solvent USTs at Building 114 – four 10,000 gallon solvents tanks and two 6,000 gallon solvents tanks (PAP-00219985-86).

According to the 2002 Peak RIR/RAW, UST-7 (550 Gallon Fuel Oil UST) was decontaminated, removed and inspected. Approximately five cubic yards (CY) of impacted material were excavated and stockpiled for disposal. Following site investigation activities, the UST excavation was backfilled with clean fill (PAP-00220536-37).

Copper

In response to the EPA's Request for Information, Current Congoleum stated that it did not know whether copper was used at the Kearny Facility (PAP-00233588).

During the 2001 Peak Phase II ESA, samples (F-3 and F-4 at depths of 5.5" to 6' bgs) were taken at Water Reservoir Area No. 2 on the DVL property, which was located along the west wall of Building No. 17, east of Building No. 31. Sample F-4 showed copper at 557 mg/kg (PAP-00231550, 56).

In addition, samples (F-5, F-6, and F-6a at depths of 5.5" to 6' bgs) were taken at Water Reservoir Area No. 3 on the DVL property, located directly adjacent to the north side of Water Reservoir No.2 along the west wall of Building No. 17. Sample F-6a showed copper at 482 mg/kg (PAP-00231551, 56).

Lead

Congoleum's January 15, 1998 response to EPAs Request for Information, states that lead may have been used in connection with manufacturing products at the Kearny Manufacturing Facilities (PAP-00233588). Lead may have been used in pigments as part of the production of linoleum, VT and AT (PAP-00233592).

Mercury

Current Congoleum's January 15, 1998, response to the EPA's Request for Information, states that adhesives would have included standard floor adhesives using lignin as an antifungicide filler and small amounts of mercury as an anti-bacteria agent (PAP-00233591).

Historic Fill

The Allocation Team has determined that the Kearny Facility site is partially located on regional Historic Fill as designated by the NJDEP.[1]

Two parcels of the Kearny Facility bordered the Passaic River: Block 1, Lots 12 and 12.01 (purchased by Franklin Plastics Corporation in 1976, outlined in **YELLOW** on the 2005 Annotated Tax map) and Block 1, Lots 13 through 15 (purchased by Kearnyland Inc. in 1959, outlined in **BLUE** on the 2005 Annotated Tax map, are located on the regional Historic Fill; the remaining properties owned and sold over time by Congoleum entities (east of Passaic Avenue) are not located on regional Historic Fill. Based on a review of the documents for this report, it appears that Current Congoleum did not conduct an investigation of the historical fill because Congoleum entities have not owned the property since 1959 and 1976, respectively. Since a Congoleum-Bath entity may have owned the land during a portion of the time period of the historical fill, information

[1] *Digital Geodata Series, DGS04-7, Historic Fill for New Jersey*, https://www.nj.gov/dep/njgs/geodata/dgs04-7.htm, Quadrangle #52 and #53 (NJDEP map identifying locations of recognized historic fill).

provided by Franklin-Burlington Plastics investigation of the historic fill on Block 1, Lots 12 (Building No. 115, (outlined in **YELLOW** on the 2005 Annotated Tax map) is included in this report.

NJDEP has established that historic fill deposited in the Coastal Plain and Piedmont regions of New Jersey is known to contain the OU2 COCs: PAHs, lead, copper, and mercury.[2] Accordingly, NJDEP technical requirements for property containing Historic Fill requires sampling for the EPA Target Compound List for PAHs and Target Analyte List for metals, including lead, copper, mercury, and the OU2 PAH COCs.[3] PAHs, lead, copper, and mercury are recognized by NJDEP to be constituents of Historic Fill at varying levels, not atypically at or exceeding residential soil standards.[4]

The levels of PAHs, copper, lead and mercury detected at the site in soils are presented in the table below (PAP-00056222-24).

COCs Found in Onsite Soils	
COC	**Max Detected Concentration**
Lead	879 mg/kg
Copper	168 mg/kg
Mercury	8.8 mg/kg
Benzo(a)anthracene	9.1 mg/kg
Benzo(a)pyrene	5.3 mg/kg
Benzo(b)fluoranthene	6.2 mg/kg
Benzo(k)fluoranthene	2.8 mg/kg
Dibenzo(a,h)anthracene	1.0 mg/kg
Indeno(1,2,3-cd)pyrene	4.2 mg/kg

According to a Franklin Burlington Preliminary Assessment Report (PAR) summary on non-Indigenous fill materials, the property purchased by Franklin Plastics on February 16, 1976, Block 1, Lot 12 (Building No. 115), outlined in **YELLOW** on the Annotated 2005 Tax Map) contained nonindigenous fill material for raising the elevation. The material allegedly covered approximately 85% of Block 1, Lot 12 and ranged in depth from between 5 and 7 feet deposited upon tidal marsh sediments (PAP-00054694). The western portion of the Block 1, Lot 12 along the Passaic River contained the most fill. A 1929 map establishes that bulkheading and fill operations on the property began prior to 1929, when the property was owned by "Watts Kearny." (PAP-00724491). The PAR

[2] *Characterization of Ambient Levels of Selected Metals and cPAHs In New Jersey Soils* (2002) and *Characteriz7ation of Ambient Levels of Selected Metals and Other Analytes In New Jersey Soils* (1997), studies prepared for NJDEP, Division of Science and Research, by BEM Systems, Inc.
[3] New Jersey Department of Environmental Protection (NJDEP), *N.J.A.C. 7:26E Technical Requirements for Site Remediation,* Table 4-2, November 2009 [Note that Table 4-2 has been deleted from the current version of N.J.A.C. 7:26E (May 7, 2012) and the updated *Historic Fill Technical Guidance* (April 2013) as NJDEP believed that the tables list of historic fill constituents was too restrictive].
[4] NJDEP Table 4-2 (PAHs and lead) and a summary of NJDEP records regarding investigations of properties in the vicinity of the Passaic River recognized to be located in areas of Historic Fill indicate that the following average/maximum (mg/kg) contamination levels of OU2 COCs exist in area Historic Fill: PAHs (1.91/160), lead (574/10,000), copper (11.2/1,200), and mercury (0.21/3.7).

Report states that aerial photographs show that the first stage of fill occurred between 1933 and 1946 (PAP-00054694; PAS-00063679). Bath-Congoleum purchased a portion of this property in 1940 and another in 1946 (PAP-00448252-56; PAP-0048259-60) . According to the PAR Report the second stage occurred between 1953 and 1966. The fill was comprised of silty sand, course sand, cinders, gravel, brick fragments, rod, wood pieces, glass, ceramics and scrap metal. Even with the fill events, the site is still subject to periodic flooding from the Passaic River (PAP-00054694).

5. COC Pathways

Sanitary and Storm Sewer

Congoleum-Nairn, Inc. sent a letter to PVSC in March 1926 acknowledging discharge of sewerage to the Passaic River and noting that it was working on a plan to resolve the issue. The letter does not state the amount or content of the sewage discharged (PAP-00056076; PAS-00058529).

A 1928 PVSC list of polluting town sanitary sewers noted that Congoleum-Nairn Company sanitary sewage pollution was a result of Kearny town sewers being blocked by sand. The facility was on the list because sewage was coming from an outlet at their interception chamber. PVSC acknowledged that Congoleum-Nairn installed the chamber at considerable expense and trouble and noted that there was no trouble until the chamber became blocked by sand. The letter does not state the amount or content of the “pollution” associated with Congoleum-Nairn sanitary sewage (PAS-00058532). In 1947, PVSC notified facilities of stream contamination. An oil sample collected near Bergen Avenue in September 1947 contained good fresh fuel oil that was traced to a Congoleum-Nairn Inc. engine room. The inspector found an open valve and considerable amounts of fuel oil that drained into the sanitary sewer. Closing the valve stopped the release into the sanitary sewer. The inspector noted that only small amounts of fuel oil had intermittently reached the Passaic River through the storm sewer as a result of intermittent overflow, and the Kearny sewer department was asked to clean out the sanitary sewer to prevent overflows (PAS-00058534).

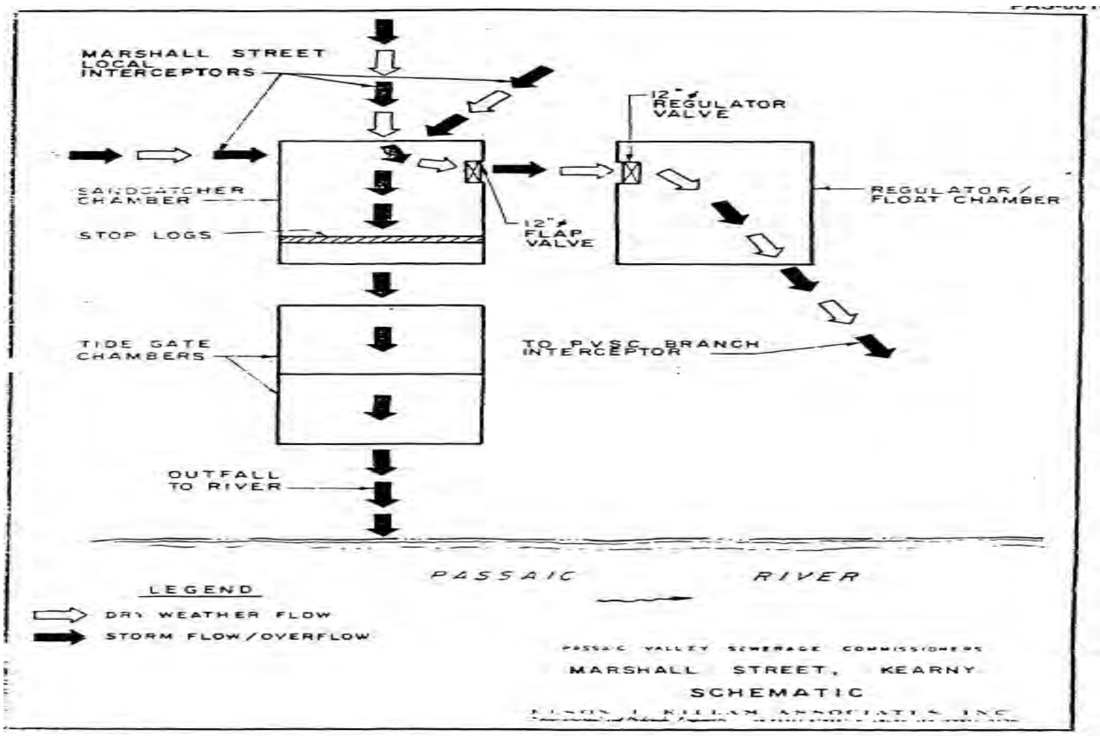
In November 1949, PVSC noted sanitary sewer system overflows into the Passaic River that would continue until the waste from the facility’s 24” line could enter a line large enough to prevent overflow. At the time the connecting chamber was only 9” (PAS-00058536-37).

Bath-Congoleum responded, in part, as follows to a May 31, 1972, Waste Effluent Survey prepared for the Passaic Valley Sewage Commissioners:

“Water Use in 1971:

- Water to Sanitary Sewer: 39,158,000;
- Water to Storm Sewer, River or Ditch: 30,000,000;
- Name of River, Stream, or Tributary, and location of storm sewer or ditch outlet to river, stream, or tributary: Passaic River.” (PAP-00056086, 8).

A 1976 PVSC Overflow Analysis for Marshall Street, Berger and Nairn CSOs stated that the Marshall Street Overflow Chamber served a heavily industrialized/commercial area. During periods of rainfall, a portion of the combined flow entered the PVSC interceptor with the balance overflowing the stop logs and discharging through the outfall into the Passaic River (PAS-00105009-10). The average daily flow during wet weather was an estimated 0.12 million gallons per day. It was estimated a combined flow of 2.5 million gallons per day would produce an overflow. During dry weather, PVSC estimated the average daily flow was 0.09 million gallons per day (PAS-00105014). Between February and April 1975 there were 13 rainfall events and six observed overflows and three recorded overflows (PAS-00105016). The range of rainfall duration was between 0.75 and 25.75 hours with average rainfall intensity between 0.015 and 0.175 inches/hour (PAS-00105027). A PVSC Overflow Analysis for Marshall Street is below.



(PAS-00105207)

According to an Overflow Data Extract, the Bergen Avenue and Nairn Avenue Overflow Chambers served primarily residential districts with some industrial flows. The cause of overflow in primarily residential chambers during rainfall was similarly described, i.e., overtopping the interceptor, flowing over the stop logs and into the Passaic River; however, average daily flow for Bergen during wet weather was an estimated 0.06 million gallons per day. PVSC estimated a combined flow of 0.090 million gallons per day would produce an overflow. The average daily flow during dry weather was estimated at 0.05 million gallons per day (PAS-00105020, 23). Average daily flow during wet weather for the Nairn Avenue Overflow Chamber was 0.69 million gallons per day, and an estimated combined flow of 3.2 million gallons per day would produce an overflow. The estimated daily flow for dry weather was 0.54 million gallons per day (PAS-00105051).

Current Congoleum noted in its January 15, 1998, response to EPA's Request for Information "there were no waste treatment systems or facilities at the Kearny Facility." (PAP-00233571). Contact and non-contact cooling waters were discharged to the Kearny sanitary sewer system. However, in an October 21, 2004, letter from Spartech Polycom stated: "Spartech Polycom's facility located at 113 Passaic Avenue has recently implemented wastewater re-use and conservation measures that have eliminated the facilities contact and non-contact cooling water discharge to the Passaic River. A closed loop chiller was installed to replace the existing cooling tower thereby eliminating the facilities non-contact cooling water discharge." (PAP-00057271). According to the January 15, 1998, response, prior to the early 1970s, when all manufacturing activities at the Kearny Facility ceased, contact cooling water, which was used to cool finished tile products in Building No. 115, was not used in the manufacturing process and, therefore, should not have contained anything other than trace amounts of plasticizer, dirt and washing contaminants as a result of being washed over finished product (PAP-00233571-2). Contact cooling water may have been intermittently discharged to the Passaic River during times of sanitary sewer overflow (PAP-00233572). The response also states that contact cooling water from spraying of finished products may have been collected in open trenches in the floor of some buildings and discharged to the sewer system and/or the Passaic River. Non-contact cooling water would have been discharged to the Passaic River (PAS-00104941). Congoleum employees believed that there were outfalls discharging cooling water and storm run-off into the Passaic River (PAS-00104942).

The only water involved with the manufacture of linoleum at the Kearny Facility was "non-contact" cooling water used to cool the manufacturing equipment. This non-contact cooling water was run through a closed system of sealed pipes connected to the manufacturing equipment. The water in this system never made contact with the linoleum product or equipment (PAP-00724240-41).

Finished VT was cooled by running through a cooling water tank. Water was supplied to a VT cooling tank by two artesian wells. Kearny Facility personnel cleaned the cooling tank approximately once a week, which involved draining water from the tank to a drain system. As the material that went through the cooling tank was uncut, finished product, the only material that could have been transferred to the tank might be very small pieces of finished and non-soluble VT (PAP-00724242-43).

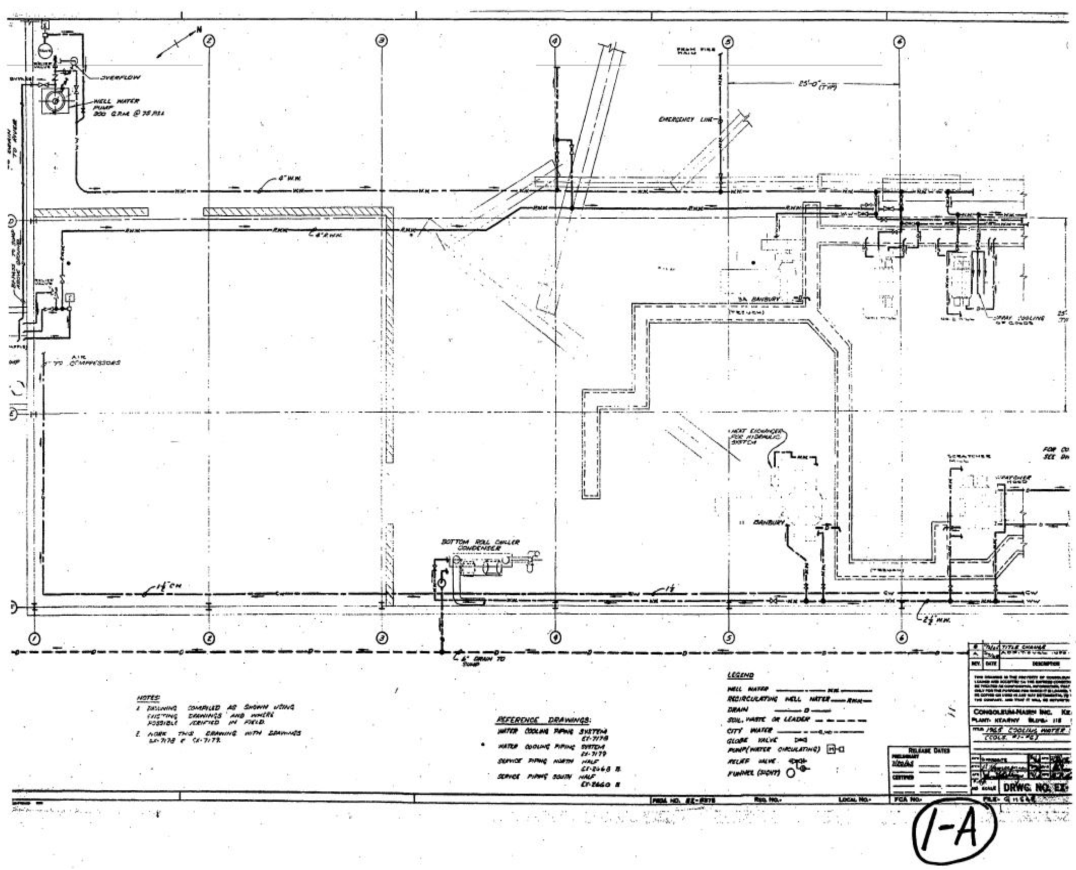
Similar to the production of linoleum, non-contact cooling water was used to cool certain machines involved in the manufacture of VT in Building 115. The water was run through a closed system of sealed pipes connected to the manufacturing equipment and never made contact with the VT product or equipment (PAP-00724243).

In 1957, the VT production line in Building 115 was updated, but the general ingredients of VT remained the same. The primary 1957 equipment updates included a scratcher, consolidator, and an additional calendar. In addition, the VT cooling water tank was replaced with a water spray nozzle system. The water for the misting system was also sourced from two artesian wells (PAP-00724243).

During the updated VT manufacturing process, when the uncut, finished product emerged from the newly added third calendar, the material was cooled with a fine mist of water from numerous spray nozzles, which system used less water and also cooled the VT product at a faster rate. While the majority of misting cooling water evaporated, some water dripping occurred. Dripping water was collected under the VT production conveyor into a small reservoir that connected to a drain in the floor of Building 115 (PAP-00724243).

Water was supplied to the VT misting system by the same artesian wells that provided water to the older tank cooling system. Like the previous cooling system, the misting water contacted only uncut, finished product. The only material that could have been transferred to the reservoir catching dripping water might be very small pieces of finished VT (PAP-00724243).

See the following schematic of the Cooling Water System in Building No. 115, where VT and AT were manufactured, as it existed in 1965.



(PAP-00233598)

Current Congoleum's January 15, 1998, response to the EPA's request for information notes the possibility that floor drains and open trenches may have connected to the sanitary sewer system during the years of manufacturing operations at the Kearny Facility (PAP-00233573). Current Congoleum's employees at the time of the January

15, 1998 response to the EPA request for information believed that retention ponds for firefighting purposes may have existed at the Kearny Facility, but that there were no lagoons at the site (PAS-00104941). Current Congoleum employees at the time of the January 15, 1998 response also believed that outfalls at the Kearny Facility discharged cooling and storm water runoff into the Passaic River (PAP-00233574).

According to a Phase I ESA prepared by Peak for the DVL Property (166-194 Passaic Avenue Kearny, New Jersey 07032 Block 15, Lot 7a - outlined in **ORANGE** on the Annotated 2005 Tax Map (PAP-00220445)), a large concrete water reservoir was present in the center of the DVL Property, and was reported to have been used for the collection of storm water for fire prevention purposes, with a capacity of 116,000 gallons (PAP-00219972).

Direct Release

Former employee, Daniel Ross, stated that floor drains in Building No. 115 were routed through a large pipe that discharged directly to the Passaic River (PAS-00058526). Former employee Anthony Piacente stated that the pipe from Building 115 to the Passaic River discharged contact cooling water used to cool uncut, finished tile product and that the only material that could have been transferred to the water might be very small pieces of finished tile (PAP-00724242-43).

Flooding

At the time of Current Congoleum's response to EPA's Request for Information, Current Congoleum employee's believed that from time to time the river banks flooded, but there was no information regarding dates, duration or extent of such flooding (PAP-00233576). In addition, Current Congoleum's 1998 response to the EPA's request for information references a schematic/drawing reflecting boring results in the area of Building No. 115 that also describes a bulkhead located along the Passaic River near Building No. 115 with a high-water mark that came well-over the bulkhead (PAP-00233595, PAP-00233601).

Spills

A 1998 Current Congoleum's response to EPA's Request for Information noted that Current Congoleum employees believed but had no personal knowledge of a spill of No. 6 fuel oil in the winter of either 1973 or 1974 resulting from vandals opening a valve on a fuel oil tank at night. According to the response, the spill was discovered and cleaned up (PAP-00233575).

The Sampling Analysis Plan (SAP) for 113 Passaic Avenue (Building 115) submitted as an appendix to the Franklin Plastics 1986 Initial Notice SES, focused on possible areas of spillage of the following:

- Phenols associated with asphalt storage in the tank farm at the south side of the facility during Congoleum Corporation ownership/operation of the facility,

- Phthalates associated with unloading, storage, and processing of plasticizer compounds at transfer lines, around the dust collector system blower, and around the two storage tanks used for plasticizer storages,
- Heavy metal bearing pigments on and around process equipment within the Production Plant and the dust collector system blower,
- Transformer fluids associated with the transformer substation on the south side of the property,
- Petroleum hydrocarbons associated with oil lubricated compressor discharges throughout the facility, and Gasoline from the underground storage tank or related plumbing system (PAP-00057055).

Incidents

On or about August 19, 1943, during World War II, there was an explosion at the Kearny Facility. At the time of Current Congoleum's January 15, 1998, response to EPA's Request for Information, Current Congoleum employees believed, but had no personal knowledge, that the explosion was caused and/or arose from the processing used for camouflage netting with nitrocellulate, an explosive (PAP-00233575).

According to an October 18, 1943, memo to the Kearny Fire Department the explosion occurred at Building No. 12 in the Number 6 stove, as a result of an explosion of vapors of Sovosol No. 5 used as a solvent for the paint used in the treating of camouflage nets (PAP-00232310). In an August 19, 1943, Kearny NJ Police Department report, Sovasol was stored in two small tanks containing 1,000 gallons each and one large tank containing 2,500 gallons. The three tanks of Sovasol located in the yard on the north side of the Building No. 12-D Section. The two small tanks were on small cars and the large tank was stationary about 50 feet away from the building (PAP-00232576).

6. Regulatory History/Enforcement Actions

Inspections

The Town of Kearny, Department of Fire conducted a detailed inspection of the Congoleum-Nairn facility between April 1 and April 25 of one year in the 1950s. The inspection identified multiple conditions which constituted a fire hazard including:

- Building 115 – Tile Manufacturing: Housekeeping conditions were very poor on the south end. Oil was being dumped in the weeds next to Building 115 on the river side. The damper control for the fixed CO-2 system inside the duct system above the mixing machine was found to be disconnected.
- Building 23 – Sealer Mixing: Housekeeping very poor on north side.
- Building 32 – Flannel saturated with Kerosene Oil is stored on the outside of the building (PAP-00056081).

According to the September 17, 1990 Site Inspection Report, prepared by NUS Corporation for the Environmental Protection Agency (1990 EPA SI), an EPA contractor's on-site reconnaissance at 113 Passaic Avenue (the location of Congoleum Building 115) in April 1990 discovered three areas of abandoned drums along the Passaic River. The drums were in poor condition and some drums were partially buried. The contents of the drums appeared to be crumbled pieces of tile. Solidified sludge from a vinyl tile manufacturing process was also observed on the property (PAP-00337307; PAP-00054201-02). When discussing the drums and the sludge pile, the 1990 EPA SI specifically states that "the former operator of the property, Congoleum Corporation/Floor Covering Division, manufactured asphalt and/or vinyl tile on site from approximately 1946 to 1974" (PAP-00337307). Congoleum's January 15, 1998, response to EPAs Request for Information that current Congoleum employees had heard stories over the years had stated "scrap vinyl may have been buried on some portions of the Kearny Facility" (PAS-00104956; PAS-00104961).
In June 1990, one waste composite sample (NJEP-S2) was collected from two of the drums. Mercury, copper, PAHs, and lead were detected in the sample. Mercury, copper, PAHs, and lead were also detected in the soil samples collected in the proximity of the two drums (NJEP-S1 and NJEP-S3) and near the solidified sludge (NJEP-S4) (PAP-00337325).

Violations

On May 7, 1979, almost 20 years after the DVL Property (outlined in **ORANGE** on the 2005 Annotated Tax Map, PAP-00220445) had been sold by Congoleum entities, a notice of violation from the Kearny Fire Department, Bureau of Combustibles was sent to Toch Park management for the removal of numerous 55-gallon drums of waste chemical due to the condition of the drums (PAP-00233320). According to the 2000 Peak Phase I ESA, the drums were located at Building No. 114 (PAP-00219986). Note: The violation did not state what chemicals were in the drums.

According to research conducted for the 2000 Peak Phase I ESA, the following information regarding Building No. 114 was located all of which is dated after Congoleum entities had sold the DVL Property:

- A handwritten note indicating that D&J Oil Service of Paterson, NJ is to start removing drums from the site on August 21 and 22, 1979. The drums were placed on the property by a tenant of DVL, not a Congoleum entity

- Handwritten correspondence dated August 18, 19, and 20, 1981, stated that numerous chemical containers, 55-gallon drums, bottles, and cans of hazardous materials abandoned by former DVL tenant Talon Adhesives remained within different areas of Building No. 114. Note: The types of chemicals were not identified in report (PAP-00219986).

- The Kearny Fire Department noted reduced access to Talon's exit path, due to hardening of adhesives on the floor resulting from ruptured drum spillage and in-complete cleanup of residue, worsened the problem (PAP-0023321).

- A Kearny Fire Department letter dated April 24, 1968 stated that Talon's "entire operation has now become extremely hazardous," and that "the housekeeping and general appearance is very poor" (PAP-00232841).

- The Kearny Fire Department demanded that Talon "Repair leak in solvent piping" and "Refrain from storing solvents in open containers" (PAP-00232841).

Permits

Current Congoleum stated in its January 15, 1998, response to EPA's Request for Information, that it was not aware of RCRA permits being issued to any Congoleum entity with regard to the former Kearny Facility, however, as a result of a Freedom of Information Request (No. 02-RIN-01147-97), Current Congoleum's attorneys were informed that an RCRA permit was issued to Belgrove Arms with regard to a facility known as "Congoleum Building – Geller Associates" in or about September 1989 with an EPA ID. No. of NJD040736704 (PAP-00233569). The entity Belgrove Arms and the facility "Congoleum Building – Geller Associates" are not affiliates or otherwise related with or to Current Congoleum or any other Congoleum entities, but the referenced property appears to be the "Kearny Administrative Facilities" parcel property purchased on March 16, 1987, by Belgrove Arms, outlined in **MAGENTA** on the 2005 Annotated Tax Map (PAP-00219963; PAP-00220445; PAP-00233569).

7. Response Actions

Characterization Activities

The following characterization activities have taken place at the facilitythat occurred on the DVL Property after being sold by Congoleum entities in 1960; outlined in **ORANGE** on the 2005 Annotated Tax Map (PAP-00220445):

- Phase I Environmental Site Assessment for the site located at 166-194 Passaic Avenue Kearny, New Jersey, Block 15, Lot 7a, dated October 2000 (PAP-00219965).
- Phase II Environmental Site Assessment report for 166-194 Passaic Avenue, Kearny, New Jersey, dated November 2001 (PAP-00231543).
- Remedial Investigation Report/Remedial Investigation Workplan for the site located at 166-194 Passaic Avenue Kearny, New Jersey, Volume I of III, dated January 2002 (PAP-00220527).
- Remedial Investigation Report/Remedial Investigation Workplan/Remedial Action Workplan, Toch Park 166-194 Passaic Avenue, Volume I of II dated December 2008 (PAP-00232602)Self-Implementing Cleanup and Disposal of Polychlorinated Biphenyl (PCB) Remediation Waste Plan dated May 2015 (PAP-00220923).
- Amendment to the Initial Notification and Self-Implementing Cleanup and Disposal of Polychlorinated Biphenyl (PCB) Remediation Waste Plan dated August 2015 (PAP-00223723).

The Franklin-Burlington Plastics, Inc., Facility Data Report includes information concerning response actions relating to the property conveyed to Franklin Plastics on February 16, 1976 (PAP-00220430) (highlighted in YELLOW and identified as Block 1, Lots 12 and 12.01 on the 2005 Annotated Tax Map).

According to the September 1984 Hart Preliminary Site Assessment conducted at 113 Passaic Avenue (the location of Congoleum Building 115), four soil samples were collected for chemical analysis and subsurface soil samples were collected for physical inspection and OVA analysis. One surface sample consisted of a composite of several samples in a spill and vegetative stress area near the air pollution control units and the other three were collected inside the tank containment area (PAP-00057068).

Composite Sample: The surface soils of the locations chosen for the composite chemical sample were described as black, compact, and largely composed of fine sandy silt with large amounts of debris such as plastics, broken bottles, metal scraps, bricks, etc. At one of the composite sample locations, C1-A, the soils were covered with a silvery material (PAP-00057070).

Tank Containment Area: This area consisted of a square concrete walled structure within which were five columnar tanks formally used by Congoleum Corporation for asphalt storage. Around the base of the tanks, and formerly covering a majority of the containment area, were solidified asphalt flows. Surface samples and test pit locations were selected to provide fairly even distribution as well as possible worst-case conditions (PAP-00057070).

The 2000 Peak Phase I ESA was conducted at the DVL Property for the purpose of observing the presence or likely presence of hazardous substances or petroleum products that may show an existing release, a past release or a threat of a release (PAP-00219969). As a result of the 2000 Phase I ESA, Peak, DVL's consultant, claimed to have observed the following recognized environmental conditions (RECs) at the site:

- Storage Tanks: Two aboveground bulk storage tanks, and records relating to ten underground storage tanks were identified by Peak during the assessment. No records regarding removal or disposal of the storage tanks were discovered by Peak, nor were records discovered by Peak that related to an evaluation of the condition of soil and/or groundwater in the vicinity of these areas.

- Fill Material: Three filled water reservoirs were located by Peak on the subject property. Peak did not locate records identifying the quality or source of the fill material with which they had been filled.

- Storage Areas: Peak claimed to have discovered current and historical drum storage areas during the investigation. A site plan from 1941 showed that 125 drums of resin had been staged outside the north wall of Building No. 13. In addition, site inspection records from 1981 identified numerous drums of chemicals and hazardous materials within Building No. 114. Hazardous materials were also noted to be stored within Building Nos. 114 and 16.

- Potential PCB-Containing Equipment: A total of eight electrical transformers were identified on the subject property which, according to Peak, due to their aged appearance and staining was considered RECs. The transformers were installed after Congoleum entities sold the property to DVL in 1960 (PAP-00724490; PAP-00724489). Two of the transformers were located on the outside walls of Building Nos. 12, and 24 respectively. The remaining six transformers consist of two separate groups of three pad mounted units, located south of Building No. 114 and west of Building No. 17. A County Health Department investigation report and an NJDEP Communications Center Notification Report state that a potential release occurred in 1994, during the time that DVL owned the property, from transformers behind Building No. 18, which was formerly located directly south of Building No. 114 (PAP-00219969-70; PAP-00219984).

The purpose of the 2001 Peak Phase II ESA was to further investigate certain potential areas of environmental concern identified during the Phase I ESA process. These were limited to investigations related to the presence or absence of suspected USTs; an evaluation of the environmental quality of fill material within three former water reservoirs; and an evaluation of soils adjacent to six electrical transformers for the presence of PCBs (PAP-00231547).

The 2001 Peak Phase II ESA identified one 550 gallon No. 2 fuel oil UST at Building No. 13 and six solvent USTs associated with Building No. 114. It was recommended that these be closed by following proper UST closure procedures. The fill material in the reservoirs included brick, wood, plastic, and concrete fragments at each reservoir location, in addition to an oily material exhibiting soil staining and petroleum odors at the base of Reservoir Nos; 2 and 3. The results of the pad mounted transformer investigation showed the presence of the PCB Aroclor-1254 in each soil sample collected adjacent to the pads (PAP-00231553-54).

According to the Peak Remedial Investigation Report/Remedial Investigation Workplan (RIR/RAW) for the DVL Property January 2002 (2002 Peak RIR/RAW), remedial investigations were conducted for two areas: 550 Gallon Fuel Oil underground storage tank (UST-7) and Solvent UST Area consisting of UST-1-6. UST closure activities were initiated on May 23, 2001. During closure, corrosion holes were noted within five of the USTs (PAP-00220532).

Following removal of the USTs from their respective excavations, potentially impacted soils were excavated, and stockpiled on site for evaluation. Results of soil sampling at each excavation did not show any target contaminants above applicable cleanup criteria (PAP-00220532).

According to the 2008 Peak RIR/RI/RAW, the following remedial investigations occurred:

- AOC-3 Reservoir No. 2 – In the fall of 2003, soil delineation was conducted around Reservoir No. 2. The results of the investigation showed a black, thick (similar to No. 4 oil), oil/product within 11 of the 20 boring locations. The soil sample results showed that the contamination is limited to Total Petroleum

Hydrocarbons (TPHs) and that the highest TPH concentrations were noted near the piping run associated with the aboveground fuel oil tanks (PAP-00232620).

- AOC-6 Former Pad Mounted Transformer – Additional sampling was conducted on October 27, 2003 following the decommissioning of the transformers. Four surface samples (TF-1 through TF-4) were collected from the sides of the pad associated with the transformers for PCB analysis. The results of the analysis did not show the presence of PCBs above applicable soil cleanup criteria. On November 3, 2003 two additional soil samples (TF-9 and TF-10) were collected on the west side of samples T3 and T-4 to complete horizontal delineation. The results of the analysis did not show the presence of PCBs. Based upon these results, Peak determined that it appeared as if the source of the PCBs within T-3 and T-4 was associated with fill used in Reservoir No. 4 and not the transformers (PAP-00232623-24).

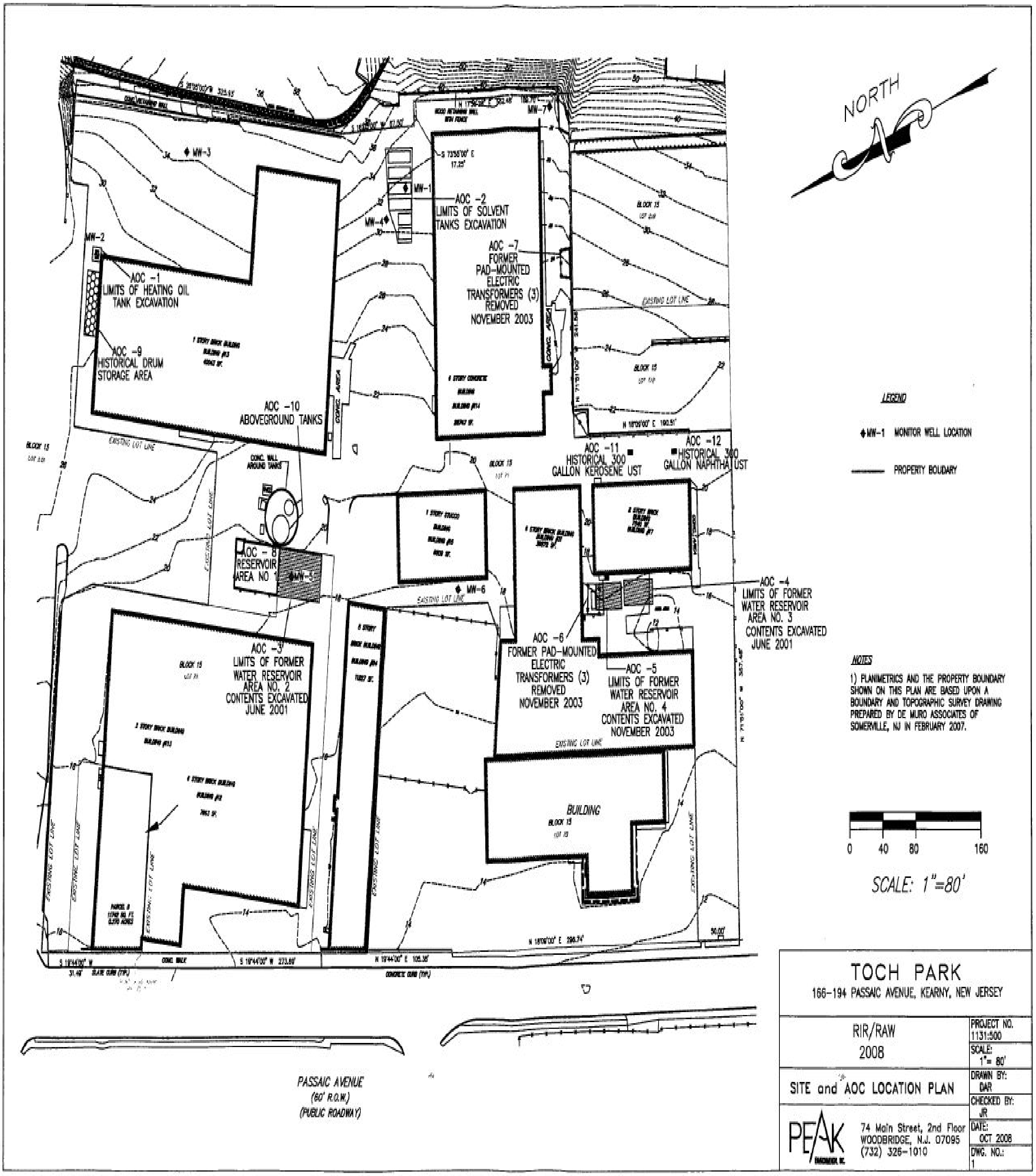
- AOC-7 Former Pad Mounted Transformer – Further sampling was conducted on October 27, 2003. Four surface samples (TF-5 through TF-8) were collected from the eastern, northern and western sides of the pad associated with the transformers located adjacent to Building 114 for PCB analysis (PAP-00232625).

- AOC-9 Historical Drum Storage Area – Historic records showed a drum storage area along the northern wall of Building No. 13. On August 5, 2008, four soil borings (DS-1 through DS-4) were advanced and tested. The results did not show the presence of any target compounds detected above the SCC (PAP-00232625).

See the following site map for locations of the above discussed AOCs.

Congoleum Corp.

Diamond Alkali OU2 Allocation
ADR Confidential
Facility Data Report



(PAP-00232636)

According to the 2015 Peak PCB Cleanup Amendment, an amendment was needed to address PCB impacts detected in concrete and brick in the swale and soils in the sumps and manholes of the swale, around and beneath Building No. 114, and adhesives from Building No. 114 and Building No. 31 (PAP-00223726). The swale is comprised of concrete walls and a brick top that connects to grates, the pipe appears to be constructed of clay. Four sumps and two manholes were found. Based on the initial investigation, the swale appears to end at a sump, no additional manholes were encountered (PAP-00223729).

The 2015 Peak PCB Cleanup Amendment stated that soil delineation will be conducted in the area outside of the Building No. 114 in order to define the vertical and horizontal extent of the observed concentrations of PCBs. In addition, three soil samples beneath the foundation of each bay of Building No. 114 will be collected to evaluate subsurface conditions (PAP-00223731). Note: No further information on the soil delineation after 2015 was located in the materials provided for review.

Remedial Activities

According to the 2002 Peak RIR/RAW, the following UST Closure Activities occurred:

- UST-7 (550 Gallon Fuel Oil UST) was decontaminated, removed and inspected. Approximately five cubic yards (CY) of impacted material were excavated and stockpiled for disposal. Following site investigation activities, the UST excavation was backfilled with clean fill (PAP-00220536-37).

- UST-1 through 6 (Solvent UST Area), removal of overburden soils above the six tanks occurred. Following gauging of the soils, the tank contents were pumped out and staged on site within bulk storage tanks pending disposal. The USTs were decontaminated, removed, and 80 CY of impacted soils was removed (PAP-00220537-38). Following site investigation activities, the UST excavation areas was backfilled with clean overburden fill and clean fill (PAP-00220539).

According to the 2008 Peak RIR/RI/RAW, the following remedial activities occurred:

- AOC- 5 Reservoir No. 4 – During November 2003, the contents of Reservoir No. 4 were excavated and stockpiled on site pending disposal. Approximately 100 tons of suspect petroleum impacted soil was excavated from this reservoir and transported off site on Sept. 15, 2004 (PAP-00232623).

- AOC-6 and AOC-7 Former Pad Mounted Transformers – Following removal of the transformers, on November 6, 2003, approximately 10 tons of PCB impacted soil was excavated from the area adjacent to the pad mounted transformers located to the south of Building 114 (PAP-00232625).

According to the 2008 Peak RIR/RI/RAW, the proposed RAW is to remediate known soil contamination associated with the adjacently located AOC-3, (Reservoir No. 2), AOC 8 (Active Water Reservoir No. 1), and AOC 10 (Aboveground Storage Tanks). This would consist of soil excavation in the vicinity of the three AOCs. The removal action proposed

was a single phase remediation, where the remedial action will be conducted concurrently with sampling to delineate the contamination and to confirm contaminant removal (PAP-00232631).

8. Summary of Asserted Defenses

Congoleum Corporation asserts that "the corporation currently known as Congoleum Corporation ("current Congoleum") is a different corporation (formed in 1986) with different owners than the corporations which previously manufactured products in Kearny, NJ under the brand name "Congoleum," which previously owned and/or operated the "Kearny Manufacturing Facilities" outlined in **RED** on the 2005 Annotated Tax Map (PAP-00220445) and which previously did business under the names Congoleum-Nairn, Inc., Congoleum Industries, Inc., Congoleum Corporation and/or Congoleum as a division or subsidiary of these other Congoleum entities, Bath Industries, Inc. and/or Bath Iron Works Corporation ("BIW") (jointly, "Bath-Congoleum"). Current Congoleum never owned or operated the Kearny Manufacturing Facilities, is not the successor to Bath-Congoleum or any owners/operators of the former Kearny Manufacturing Facilities with regard to the liabilities, including but not limited to the environmental liabilities and liabilities alleged by EPA as part of Operable Unit No. 2 of the Lower Passaic River Study Area at the Diamond Alkali Superfund Site arising from the ownership and/or operation of the Kearny Manufacturing Facilities.